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Original Communications

THE INCIDENCE OF HUMAN ANTHRAX IN THE UNITED STATES WITH SPECIAL REFERENCE TO SHAVING BRUSH INFECTIONS.*

By WYNDHAM B. BLANTON, M. D., Richmond, Virginia.

Anthrax, as a disease among animals, has been extensively studied since the epoch making work of Pasteur and Devaine; and the mass of valuable information upon this subject is available to all. Anthrax in man, while a rare disease, has likewise attracted attention and been well investigated. Human anthrax in the United States, however, prior to the World War, was a disease associated chiefly with workers in wool, hair and hides. It was, therefore, a disease peculiar to localities in which these industries thrived. In the United States during the years 1918 to 1919 numerous cases of anthrax occurred suddenly and often disastrously in the Army Training Camps.[1] For the most part these cases of anthrax in the Army were thought to be traceable to infected shaving brushes. The exigencies of the war allowed the shipment of hair and hides direct from wild Siberia, China and other countries, which previously had been inspected and sterilized in France and Germany.[2]

The local outbreak of anthrax around industries which handle animal material subject to infection, may be interesting enough, but it does not affect the civilian practitioner at large and unless he has seen anthrax in a center such as Boston or New York, or unless he encountered it in the Army, the disease is apt to have only a passing interest for him. However, if it can be made apparent that sporadic anthrax does occur widely disseminated throughout the United States, the interest of the civilian practitioner should be aroused. I believe there is enough sporadic anthrax to make it worth while for every doctor to be conversant with its manifestations and management. This paper deals especially with the incidence of the disease in the United States and with the shaving brush as a factor in its spread.

Anthrax is still a widely disseminated and very prevalent disease among those animals which of necessity constitute the bulk of the source of our hide and hair industry. These products ultimately in one form or another are scattered over the whole country. If they are effectively sterilized, they are of course safe. If sterilization is ineffective they naturally become the source of widespread dissemination of this disease. In 1918, a government investigation of the sterilization of shaving brushes showed that "some establishments made no pretense of sterilizing hair or bristles."[2] The same publication advised that brushes should be sterilized by soaking four hours in a 10 per cent solution of formalin and agitated at a temperature of 110 F. In admitting that sterilization is unsatisfactory we necessarily recognize the conditions under which sporadic anthrax will continue to occur. As anthrax has a high mortality when unrecognized or improperly treated, but a relatively low mortality when recognized and promptly treated, it behooves every doctor to inform himself concerning this disease.

The mistake has often been made of not recognizing anthrax. Many of the fatal Army cases, as well as those of civil life, were not recognized until too late for treatment. It has been mistaken for mumps. It has been regarded as a virulent infection demanding surgical incision and drainage. Frequently death and autopsy alone have settled the question. To superficial examination such mistakes seem natural. An insignificant lesion surrounded by massive oedema, or a charred black eschar surrounded by marked swelling, with no complaint of pain, just a little backache, headache, malaise, moderate elevation of temperature and leucocytosis, should at once arouse suspicion and lead to a bacteriological examination of the exuding serum.

Case

Complaining of a swelling of his face, an otherwise healthy young man was seen for the

*Read before the Junior Medical Society of Richmond, January 25, 1924.

first time on October 28, 1923. There was a large disfiguring swelling on the left side of the face, centering about a small vesicle, the surface of which had been broken and from which yellow serum was discharging freely. The vesicle lay about three inches below the outer canthus of the left eye. The left eye was almost closed by the swelling, which also extended downward below the angle of the jaw. There was no redness, no tenderness, no enlarged neighborhood glands.

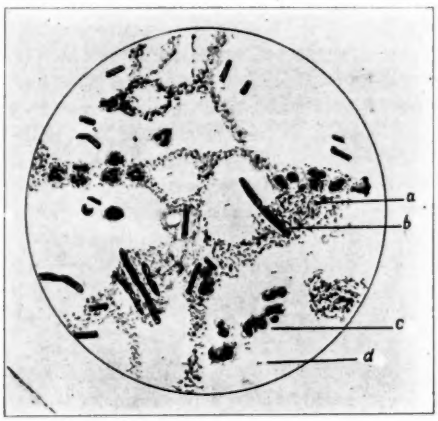

Fig. 1—High power drawing of smear taken immediately after patient was first seen. Numerous bacilli.

The young man stated that on the previous day he had noticed the swelling for the first time. A physician who saw it advised incision.

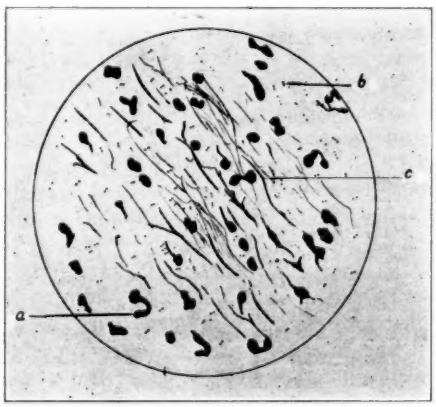

Fig. 2—High power drawing of serum from wound 24 hours after first dost of anti-anthrax serum. No bacilli seen.

This was not done because the young man felt hot and chilly, had a headache and sought other advice. He stated that about two weeks before he had purchased a fifteen cent shaving brush. His temperature was 102. His pulse and respiration were but slightly altered. Smears of the exuding serum were immediately examined and shown to contain numerous large gram positive blunt pointed bacilli. Cultures of this serum the next day showed long chains of square pointed bacilli, and guinea pig inoculation proved rapidly fatal, with recovery of the same organism. The diagnosis of cutaneous anthrax seemed, therefore, well established, and within twelve hours the patient was receiving anti-anthrax serum intravenously and subcutaneously. The initial dose was 100 c.c. by vein and 100 c.c. under the skin. On subsequent

Fig. 3—Photograph showing eschar with surrounding swelling on fourth day of disease.

days the patient received 100 c c., 70 c.c., 70 c.c. and 20 c.c. The local lesion changed rapidly: the vesicle being replaced by a black eschar surrounded by a fringe of small vesicles beyond which the original oedema still extended. The oedema subsided fairly rapidly, so that very little remained by the eleventh day. The eschar, however, persisted as a tenacious black slough for a month, when it came away leaving a deep pitted scar. The temperature did not go above 102. On the second day after the administration of serum it began to drop rapidly, and on the fifth day reached normal. The blood count which was normal on the fourth day of

the disease began to rise rapidly. The polymorphonuclears reached their maximum on the eighth day. At this time there were 13,000 white blood cells. There was a moderate increase of the polymorphonuclear series. This delayed leucocytosis, running pari passu with the administration of serum, may possibly explain the mechanism of serum therapy, namely: the arousing of leucocytosis. The advent of eosinophilia on the eighth day, and the maximum rise on the eleventh day to nine per cent is suspiciously associated with the serum sickness which developed about that time. The patient had no other treatment than anti-anthrax serum. The rapid disappearance of anthrax bacilli from the smear was striking. Within twenty-four hours after the initial dose of anti-anthrax serum the smear was free of these organisms. This change is well shown in the two high power sketches of smears taken twenty-four hours apart. The patient's recovery was rapid and satisfactory. Suspicion was naturally attached to his new shaving brush. This was secured with that of his roommate which had been bought at the same time and place. Six other new brushes which constituted a part of the original lot were also secured. All of these brushes were cultured for anthrax bacilli, some in Richmond and some by the Hygienic Laboratory in Washington. One of the new brushes was shown to contain anthrax bacilli. The cultures of the remaining brushes were negative. This was done by the State Board of Health.

The connection between an infected shaving brush and cutanous anthrax in this case seems fairly well established.

The Incidence of Anthrax in the United States

In Italy, where anthrax may be considered a common disease, more thaan 36,000 cases have been reported in the last fifteen years.[3] Anthrax in the United States fortunately reaches no such proportions. How frequent is human anthrax in the United States? I do not know where this question is in any way answered. The text books contain only vague notions indicating that it is a rare disease. The United States Bureau of the Census has some data. The table which it has furnished me shows only the mortality from this disease in the registration area. The registration area embraces only thirty-two of the forty-eight states. To form an estimate of morbidity from mortality statistics is difficult and probably inaccurate. The following table, however, shows the yearly mortality from anthrax in the United States.

TABLE I.*

Annual Death Rate From Anthrax in the Registration Area of the United States.

Area	1921	Average Yearly
California	1	1.7
Colorado	0	.7
Connecticut	0	1.
Delaware	2	.6
Illinois	1	1.6
Indiana	1	.6
Kansas	1	.6
Kentucky	0	.7
Louisiana	2	3.2
Maine	0	.3
Maryland	0	1.
Massachusetts	0	3.6
Michigan	1	1.1
Minnesota	1	.9
Mississippi	1	.3
Missouri	0	.5
Montana	0	.2
Nebraska	0	.5
New Hampshire	0	.2
New Jersey	0	1.5
New York	6	6.2
N. Carolina	0	.4
Ohio	4	1.5
Oregon	0	.3
Pennsylvania	5	5.5
S. Carolina	1	.5
Tennessee	1	.2
Utah	0	.1
Vermont	1	.4
Virginia	1	.4
Washington	1	.3
Wisconsin	0	.6
Summary (Registration Area).	32	35.

*Modifications of a table of the Chief Statistician of the Bureau of the Census.

This table was furnished me by the Chief Statistician of Vital Statistics. It will be seen in the summary that the total number of reported deaths from anthrax in the registration area of the United States for 1921, (the last year for which there are records available), was thirty-two and that the average number of deaths for the past ten years has been thirty-five. If the states not included are put in from data we have secured from their respective departments of health, the yearly mortality from anthrax in the United States may be assumed to be about forty-six. If we also assume that the average mortality from human anthrax is about 30 per cent.* there must oc-

*In Massachusetts there have occurred fifty-one deaths out of the last two hundred and twenty-two cases—or a mortality of 23%. In New York there have occurred sixty-eight deaths out of the last one hundred and eighty-three cases or a mortality of 41%. An average mortality of 30% is therefore not far wrong.—Personal Communication.

cur about one hundred and fifty-three cases of this disease yearly in the United States. Unfortunately the Bureau of the Census has no morbidity statistics concerning anthrax. In order to discover if possible the yearly incidence of anthrax, a questionnaire was recently sent to all of the State Departments of Health in the United States. I have had forty-six answers. The facts brought out by this questionnaire are exhibited in the following tables.

TABLE II.

Average Case Incidence of Human Anthrax in the United States, Based on Questionnaire.

New York	18.	Montana	1.
Pennsylvania	18.	Maine	.8
Massachusetts	13.	W. Virginia	.5
California	10.	Wisconsin	.3
Louisiana	9.	Alabama	2.
New Jersey	8.	Iowa	2.
Missouri	7.	Maryland	2.
S. Dakota	6.	Oklahoma	0.
Georgia	6.	Kansas	0.
Illinois	4.	Washington	1.
Indiana	3.	Arkansas	"Few"
Ohio	2.	Tennessee	No record
Virginia	2.	N. Dakota	0.
Delaware	1.6	Arizona	0.
New Mexico	1.5	Nebraska	0.
Minnesota	1.3	Wyoming	0.
Connecticut	1.2	Kentucky	0.
Colorado	1.2	New Hampshire	0.
Florida	1.1	Nevada	0.
Rhode Island	1.	Vermont	0.
N. Carolina	1.	Utah	0.
Oregon	1.	S. Carolina	--
Michigan	1.	Texas	--
Idaho	1.		

From Table II it will appear that there are about one hundred and thirty cases a year in the United States. This is exclusive of Mississippi whose statistics are misleading. An estimate based on mortality statistics has been made for the two states not heard from and added into the table. It will be seen that this figure of one hundred and thirty is very close to the calculated figure of one hundred and fifty-three based on mortality statistics.

Da Costa[4] believes that there are mild and abortive cases of anthrax which are not recognized. It has been observed that anthrax in handlers of hides and hair is chiefly confined to new employees, and the inference is strong that the old employees have immunized themselves by previous small inoculations which passed unnoticed. There are therefore probably more anthrax infections than the one hundred and thirty here accounted for. Moreover, the states which report no anthrax are either not in the registration area, or in their replies indicate meagre records upon which to base an answer of value. I do not know in how many states anthrax is a reportable disease. But unless it is reportable the records of the State Health Departments must be inaccurate. If this source of error could be corrected it would no doubt add largely to the total number. When the confusion associated with the recognition of a rare disease, which may superficially simulate common infections of the skin, is taken into account, we have every reason to believe that there are considerably more than one hundred and thirty cases yearly in the United States.

TABLE III.

The Incidence of Human Anthrax in the United States Per Million Inhabitants.

S. Dakota	10.	Illinois	.6
Delaware	7.1	Minnesota	.5
Louisiana	5.2	N. Carolina	.4
New Mexico	5.	W. Virginia	.3
Massachusetts	4.6	Ohio	.3
California	3.	Michigan	.2
New Jersey	2.6	Wisconsin	.1
Idaho	2.3	Mississippi	?
Georgia	2.1	Oklahoma	.0
Pennsylvania	2.	Kansas	0.
Montana	2.	Washington	0.
Missouri	2.	Arkansas	0.
New York	1.8	Tennessee	0.
Rhode Island	1.6	N. Dakota	0.
Maine	1.4	Arizona	0.
Maryland	1.4	Nebraska	0.
Colorado	1.3	Wyoming	0.
Florida	1.2	Kentucky	0.
Oregon	1.2	New Hampshire	0.
Indiana	1.	Nevada	0.
Alabama	1.	Vermont	0.
Iowa	1.	S. Carolina	?
Connecticut	.9	Utah	0.
Virginia	.8	Texas	?

Table III gives the yearly case incidence per million inhabitants by states. Interest is at once aroused as to why certain states so far exceed others in the per capita incidence of this disease. An analysis of their industries shows that there is cattle raising as in South Dakota and New Mexico, the Morocca industry as in Delaware, wool, shoes and leather as in Massachusetts and New Jersey. The predominance of the coast states may be explained by recalling that they are the channels of all the imported infected material. The state incidence is also undoubtedly influenced by sparsity of population and variation in the efficiency of the several State Health Departments.

The Relation of the Shaving Brush to Human Anthrax

There is obvious scarcity of statistical proof of the relation of facial anthrax to shaving brush infection. Of twenty-one cases occurring in the Training Camps of this country from

1917 to 1919 only one case was proved to be due to shaving brush infection,[5] though eight others were suspicious. In the United States at large, with an average of one hundred and thirty recorded cases of anthrax per year, but two were proved to be due to shaving brush infection in 1923, and a similar number in 1922. Although there are only a few actually proven cases, there are certainly a number of very probable ones arising from this source. Thus since 1919, there have been twenty-four probable and proven cases arising from the shaving brush infection in the United States.

Most sporadic anthrax, that is anthrax occurring independent of localities in which lie industries handling infectious material, such as skin, hair, hides and wool, involves the face and neck. Scholl[6] in a review of all the cases from the Massachusetts General Hospital from 1888 to 1918 shows that more than 82 per cent involve the face and neck. It does not admit of argument that the shaving brush is by far the most common article made from possibly infected material coming in contact with the face of man. We know that shaving brushes, especially the cheaper sort, which are made from horse hair—the most dangerous hair—have been frequently anthrax infected. One lot of ten thousand were all proved to be infected.[7] A Public Health report issued in 1918 says there are "still undoubtedly in trade channels shaving brushes made from material contaminated with anthrax. Any brushes found in the market which do not bear the name or the trade mark of the manufacturer should be regarded with suspicion—without doubt there are now in the market many brushes which are potentially dangerous." Six years have elapsed since that investigation and we are still having shaving brush anthrax, as our case will prove. Are these war time brushes, we are encountering, or is sterilization as poor as it was six years ago? Where facial anthrax has been investigated the shaving brush used by the individual prior to his infection has usually been a new one and of this cheaper sort. That there are no more statistics certainly establishing this bacteriological relationship is due to several causes. Many cases have not been investigated at all. Others are investigated late, and when investigation is started the brush has been lost or destroyed. The difficulty is enhanced by the fact that even when the brush has been recovered, many bacteriologically negative reports have been obtained. Poor bacteriological technique, previous mechanical removal of bacilli through use of the brush, subsequent sterilization of the brush, limitation in the amount of the original infected material, may all account for the negative results in culture. Not infrequently, when the brush itself has been negative for anthrax bacilli, other brushes in the same lot, when examined, have shown anthrax bacilli. To my own mind, therefore, sporadic facial anthrax is most probably due to shaving brush infection. If the shaving brush was recently purchased and of the cheaper sort the probabilty is even greater. If anthrax bacilli can be demonstrated upon brushes purchased in the same lot as the one used by the infected person, very little is lacking in the establishment of the etiology. Finally, if the brush which the patient had used prior to the onset of his disease can be shown to be infected with anthrax bacilli we may be quite sure of the case. Unfortunately, as has been shown, this positive bacteriological proof of the etiology has not often been made. However, the chain of circumstantial evidence against the shaving brush can usually be well established in this type of case.

Comment

In demonstrating a case of cutaneous anthrax, in showing that there are about one hundred and thirty recorded cases in the United States yearly, and in directing attention to the shaving brush as the most fertile source for the sporadic dissemination of this disease, I believe enough facts have been brought to light to make the subject of cutaneous anthrax one of more than passing interest to the physician. Anthrax probably occurs in every state in the Union, certainly in some localities more than in others, but it is none the less a widely disseminated disease. The suspicion is not lacking, moreover, that there is considerably more anthrax than the recorded cases would suggest. With physicians keen to examine bacteriologically all suspicious lesions, I have no doubt that the recorded incidence of this disease in the United States would be greatly increased, and probably by early recognition some lives might be saved.

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(1) Most of these cases reported in articles appearing in the J. A. M. A., 1918-1919.
(2) Reprint No. 523, Public Health Reports, May 9, 1919.

(3) Modern Medicine, Osler-McCrea, Vol. I., p. 638.
(4) Modern Surgery, Da Costa.
(5) Anthrax in a Soldier, W. H. Norton and E. F. Kohman, J. A. M. A., 72, 1129, 1919.
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SOME THERAPEUTIC PROBLEMS OF OLD AGE.*

By THOMAS R. BOGGS, M. D., Baltimore, Md.

Any consideration of the care of the aged sick, however cursory, as must be this brief communication, should begin with some statement as to what constitutes agedness or senescence. For our purposes, age may be considered as the decline of those developmental and dynamic processes which characterize childhood and adolescence and culminate in maturity. The arrival of age is then conditioned by morphological and physiological changes and not merely by the passage of years, to which in fact its relation varies widely.

In turning our attention to the problems of old age from the medical standpoint, let us first recognize that fragility is one of its general characteristics, and applies to mental as well as to physical qualities. It is most important for the doctor to keep in mind the psychological peculiarities of the senescent in all plans for the treatment of their ailments. Garrulity, querulousness, inattention, firm attachment to old views, with a suspicious attitude toward innovation, are among the attributes of age which tax the efforts of the physician far more at times than the difficulties inherent to the combat with disease. Secret resentment at the infirmities of age may cause the patient to conceal important facts, as pride in maintaining the appearance of vigor and efficiency may lead to over-exertion, with serious results. Again there is a certain momentum or habit of living, which, if rudely interrupted by physical or psychic shocks, may break the continuity of interest in life and be followed very quickly by death, without any special development of disease. This may be illustrated on the one hand by the fatality of relatively simple injuries or ailments in old people, and on the other by the celerity with which death may follow the loss of some accustomed occupation or the change from a beloved environment.

*Read at Annual Session of the Walter Reed Medical Society of Virginia, Newport News, Va., May 15, 1924.

With these introductory remarks we may now take up a few of the many conditions in which the treatment of old persons requires a special mode of approach. We shall confine ourselves briefly to some phases of gastro-intestinal, cardio-vascular, and renal diseases, although each of these groups might easily occupy more than the allotted time.

One of the most important handicaps of age is constipation, which is brought about by several factors—loss of chewing power and the enforced selection of foods poor in fibre, diminished activity of digestion and peristalsis, and lastly the lack of exercise, so essential for its beneficent effect upon the bowel movements. Habit and idleness lead many old people to over-eating at a time when the metabolic processes are lowered and the daily requirement of food is considerably less than in the active periods of life. Decreased sensitiveness to natural stimuli results in inattention, and regular evacuation gives place to stasis, with its attendant evils, which is but poorly combated by spasmodic use of laxatives and purges.

Each case must be studied in the light of these factors and the treatment directed to the correction of as many of them as possible. Great tact may be required in persuading the patient to replace insufficient dentition by a satisfactory artificial denture. The stubborn clinging to a few useless, or positively harmful teeth has shortened the days of many.

The sytematic taking of a sufficient quantity of water, especially in the early morning and between meals, will do much to promote the emptying of the lower bowel. This may be encouraged in some cases by offering hot water to offset the chilliness often experienced after taking cold fluids. The use of bran and other forms of cellulose contained in plant foods, as spinach, lettuce, celery and the like, with fresh and cooked fruits, may be all that is required. For those who cannot take rough foods, gelatinous water-holding substances like agar-agar or the more agreeable Psyllium used by our French colleagues, may give the required bulk and moisture to the intestinal contents.

In the matter of drugs for constipation, the relative vigor of the patient will influence our selection. In general, old people not very asthenic do better with carefully adjusted mild saline laxatives, such as sodium phosphate, or mixed phosphates, and magnesium sulphate,

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in doses just sufficient to produce a good stool, but not to purge. This is particularly recommended for the hypertensive cases and such as may have a concomitant cardiac or renal insufficiency. Early morning is the time of preference for the dose, though some patients in whom the salt acts very slowly, can take it comfortably on retiring and have a good result after the morning draught of water. With our present views as to the unfavorable effect of excess of sodium chloride on hypertensive cases, we should avoid those pharmaceuticals which depend on table salt to conceal the taste of magnesium sulphate.

The more asthenic patients cannot use the salines to advantage, and for these we must depend upon a rotation of milder laxatives, realizing that careful adjustment of dosage to produce constant effects is the key to success. Mineral oil is a good basis for this type of therapy, although seldom satisfactory alone, and open to the objection that weak or insensitive sphincters may permit leakage of the oil into the clothing. Cascara in pill or liquid form is well borne by the old, and this may be varied by substitution of phenolphthalein, rhubarb, senna, singly or in combination, with or without the addition of small amounts of aloin or podophyllin. Some of these old people are much benefited by administration of bile or bile salts with their laxative pill. Irritant cathartics like calomel are best avoided. Many patients require change of drugs from time to time, as one may lose its effect. The habit of dependence upon drugs to move the bowels is of secondary importance in the aged, when contrasted with the benefits derived from daily evacuation. In some of the bedridden cases frequent enemata may be necessary, and in such, great care exercised to avoid setting up inflammation in the rectum, either through trauma from the rectal tube, or the use of irritating solutions. In our experience, normal saline or bland oils are safer than plain water or soapsuds. Among the more ignorant as well as the mentally impaired senile patients, we may not rely too securely on the statements as to bowel movements, or their faithfulness to the regimen prescribed. In such instances the actual condition of the bowel should be checked up by digital examination in order to forestall impaction, which, when severe, may easily prove fatal.

Directing our attention now to the senile heart we find that the complaints of patients arise largely from two groups of phenomena,—those due to the irritability which increases in old age, and others associated with the retrogressive changes which senescence brings about in the heart muscle. The principal manifestations in the irritable heart group are tachycardia and certain forms of arrhythmia arising from stimuli in the autonomic nervous system. This group constitutes the greater part of the "palpitations and dropped beats" of older people—and causes much physical discomfort and worry. When we keep in mind the fact that under normal conditions we are essentially unconscious of our hearts, and that we naturally translate any sensations calling our attention to this organ as something seriously wrong, we can be truly sympathetic with the anxiety of the patient, though we in our superior knowledge recognize it as a matter disagreeable but not alarming. Time spent in carefully explaining the true nature of these phenomena will go far to reassure the patient and retain his confidence, while passing it over lightly may give him the impression that we are concealing some grave condition from him.

The forerunners of myocardial disease, including the hypertensive group, are many and but little understood. It is certain that severe infections play an important part, as has been shown for pneumonia, syphilis, and typhoid fever. Chronic recurrent infections of a milder sort, often arising in tonsils, sinuses and bad teeth, are doubtless also responsible for gradually increasing fibrosis of the heart. Whatever factors produce strain and raise blood pressure may in time result in impairment of the coronary circulation and be followed by myocardial degeneration. Hard labor, exposure to extremes of temperature, abuse of alcohol and tobacco, the constant work of carrying and nourishing excess fat, may all contribute to the gradual extinction of muscle fibres and their replacement by connective tissue. Of these agencies obesity is probably second to none in importance and the profession has long ceased to share the popular view that fatness is a sign of health. Obesity is not a frequent accompaniment of old age, for the reason that the fat die earlier, but as a precursor of senescence before its proper time it is so important as to demand our consideration.

Chronic valvular endocarditis, in those who have survived to be old, is commonly so well

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compensated as to be at most of minor import, becoming prominent occasionally in valetudinarians, who have been told thirty years ago by some injudicious doctor that they had a "leaking heart and must avoid all exertion."

With this resume of the causes of irritable and weak hearts in the aged it seems evident that dietary errors, immediate and remote, may be exceedingly important sources of both functional and organic maladies. In the former, the overloaded or gas-distended stomach gives rise to tachycardia or arrhythmia through vagal stimuli, while habitual over-eating is a factor in the second group comprising the hypertensive, arteriosclerotic and myocardial cases. It follows that any logical consideration of the treatment of senile heart disorders must include diet, general hygiene, and drug therapy—perhaps best in the order named.

It should be our endeavor in the care of the senile heart case so to adjust the dietary as to relieve the immediate emergency, and to postpone or prevent its recurrence. Our aim will therefore be to give small meals at sufficient intervals to permit of complete gastric digestion, and to select the foods with a view to maintaining a proper nitrogen balance and to decreasing or preventing the accumulation of fat. In addition, when cases show water retention, special care must be had to promote its elimination by restricting water intake.

For the irritable heart cases therefore the diet should be so ordered as to combat overfilling, pyrosis, gaseous distention of the stomach, and flatulence. To this end we direct a bland diet of simple well-cooked foods, avoiding soups, fried foods, excess of fats in any form, and carefully limiting the carbohydrates to meet the actual necessities. Thus any lean meat once a day, fish of the easily digested kinds, eggs, and milk in various forms, will be the basis of the protein ration. For bulk and to furnish water soluble vitamins, the leaf vegetables, raw or cooked, except the cabbage and cauliflower group, and the tenderer root vegetables should be given, while the acid vegetables and fruits are not permitted at all. Cereals, mealy potatoes and well cooked bread for the carbohydrate portion. Simple desserts in proper quantities, such as gelatines, custards, bread puddings, cooked fruits, and ice-cream or water ices if desired. Weak tea with lemon or cream and sugar, or a small cup of black coffee may usually be permitted, while chocolate and cocoa are not so easily digested and must be excluded in many cases. Water with the meal limited to one glass not too cold, the balance of the daily water ration to be taken between meals when the digestion is well advanced. Many asthenic old people do better to drink hot water. A small allowance of whisky and water or light wine, when a good quality of these can be obtained, may be valuable in the treatment of those who have been accustomed to their use. When there is evidence of genuine deficiency of gastric juice or of pancreatic ferments, as shown in the character of the stools, these may be supplemented by proper doses of pepsin and hydrochloric acid, or by the administration of diastase or pancreatic extracts in appropriate cases. The promiscuous dosing with proprietary so-called digestive tonics is to be deplored.

Organic heart cases of the myocardial group demand, first of all, that the work imposed upon the heart by digestion be reduced to a minimum, whether or not edema is present. For these, in the first period of treatment, a low diet of 800 to 1,000 calories is the best beginning, together with a strict limitation of the fluid intake. Carrel's diet of whole milk every two or three hours, hot or cold, and not in excess of 1,200 c.c. (40 oz.), is readily applicable to most cases. After compensation is restored, we gradually resume a maintenance diet along the line laid down in the foregoing section, having special care of excess of fluids and restriction of table salt.

Of general hygienic measures, exercise is most important, though much neglected in the aged. The majority of these heart cases whether functional or organic can take some graduated exercise with benefit, except where motor disturbances prevent, or during the stage of decompensation. Of all exercise, walking is the best and easiest regulated to meet the needs of the individual. The walk may be taken on a porch or out of doors when the weather permits, indoors when the day is inclement. In less favored cases massage and passive motion, supplemented by drives, must be substituted. Warm baths with skin friction afterwards promote vascular tone and impart a sense of well-being.

Drug therapy for the senile heart must be on the same lines as for younger persons, but in general with lower dosage. The irritable hearts are benefited by mild eliminants, and those agents which raise the threshold of

stimulation. Of these, Potassium Iodide, in doses of five to ten grains after meals, will always hold a secure place. Bromides too, in small amounts, will often control tachycardia of the simple type, while in more stubborn cases Quinine, in two or three grain doses three times daily, may prove most efficacious. Some of the reflex attacks associated with gastric distention and eructations may be corrected by carefully graduated administration of belladonna or hyoscyamus before meals.

For the weak muscle, digitalis is the drug of preference, and, properly given, will do all that may be done to restore the tone of the heart and relieve vascular stasis. In my experience, after treating the decompensated by thorough digitalization, it is desirable in many of the senile myocardial insufficiencies to administer, indefinitely, a small amount of the drug as a daily tonic. For the latter purpose I have found nothing quite so satisfactory as the granules of Digitaline Nativelle, ¼ milligramme (1/250 grain), twice daily. This is a French preparation of pure digitoxin, much more constant and powerful than the digitaline of our pharmacopoeia. In paroxysmal tachycardia and auricular fibrillation occurring in the aged, it is possible to get good results from the new quinidine therapy in a fair proportion of cases, when the trouble is not of too long standing. Codeine and morphia may be required at the first stage of treatment in decompensation, but should be used sparingly and dropped promptly. They should never be given to the functional cases at all.

A word of warning in regard to purgation in waterlogged senile heart cases. The purges so admirable in their effect on the stronger patients with edema, are very ill borne by the old, on account of the exhaustion they cause. It is far better to depend on fluid restriction and mild laxatives than to have your patient die from over-exertion on the commode.

A few observations on the kidney function in old persons, and I shall tax your patience no longer. A trace of albumen and a few hyaline casts, as pointed out long ago by Osler, are of no special significance in persons over fifty. The demoralization and worry caused by telling such patients, otherwise in good average condition, that they have Bright's Disease, is a reproach to our profession. We must not confuse the qualitative change in the urine with the ability of the kidney to perform its daily work with a comfortable margin of safety. If we find that the total output of urine is in reasonable proportion to the intake of fluid, and that the kidneys retain power to concentrate the solids fairly well, especially if there be no severe fixation of the specific gravity in the individual specimens taken through twenty-four hours, we may regard the presence of albumen and casts alone as of secondary moment. On the other hand the continued or frequent presence of red blood cells, or of pus cells, not derived from the bladder or urethra, must awaken our interest in determining just what they may signify as to more serious disease of the kidneys.

In the aged severe uremic manifestations may be preceded for a long time by milder evidences of retention of waste matter, which, if heeded, will often give the opportunity for correction by prompt measures. Unusual somnolence or drowsiness, with or without twitching, or extreme irritability, should not be passed over until we are sure that there is no evidence of renal insufficiency. Saline purges, diuretin or theocin, or hypodermic administration of sodio-caffeine benzoate in good doses at this prodromal stage, will often clear the system at once, while more resistant cases passing toward coma should have intravenous glucose if other methods fail. I have not found Basham's mixture, infusion digitalis or citrate of potash efficient in the old, and venesection, which may save the vigorous uremic in middle life, is almost surely fatal to the senile. Chronic renal insufficiency, with edema or nitrogen retention, will require dietary handling similar to, though not so strict as that employed for younger adults. The cerebral irritation and other symptoms in interstitial or glomerular nephritis may often be much relived by restricting table salt.

Up to the present time no form of glandular therapy recommended for the treatment of renal diseases has any basis in fact, notwithstanding the literature distributed by those interested in selling such products.

In closing I can but emphasize what has gone before, that the old are somewhat like the very young, fragile, fanciful, and easily frightened, and that our success in caring for their ailments will be measured not alone by our medical knowledge, but by our tact, candor and patience.

1013 *North Calvert Street.*

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ARSPHENAMINE DERMATITIS. REPORT OF A CASE TREATED WITH SODIUM THIOSULPHATE.*

By B. E. HARRELL, M. D., Norfolk, Va.

The following case is of interest only in regard to its treatment. It is reported chiefly to call attention to the drug employed, as we believe it offers a distinct advance over anything yet devised for the handling of a very unsatisfactory group of cases.

The treatment is based on the fact that many of the heavy metals, particularly arsenic, mercury, lead, bismuth, zinc, and copper may be precipitated in inert form by non-metallic sulphur. In case of poisoning with any of these, if we can bring about this precipitation we at once put an end to its toxic action and allow the body to begin the process of repair. The prospects of recovery and the period of disability will naturally depend on the extent of the damage before treatment was undertaken.

The sulphur compounds that have been used for this purpose are: calcium sulphide, calcium sulphite, and sodium thiosulphate. Of these, the last has found most favor, as it is readily soluble and is not toxic in doses up to two grams, intravenously.

P. Ravaut was the first to use sodium thiosulphate in the treatment of arsphenamine dermatitis. In this country McBride and Dennie have reported numerous cases of arsenic and of mercury poisoning successfully treated in this manner. Ockerblad reports a case of lead poisoning with profuse hematuria whose hematuria disappeared on the second day and who was discharged at the end of two weeks.

McBride and Dennie claim that sodium thiosulphate converts all these toxic metals into the non-toxic, insoluble sulphides and that it is the treatment of choice in poisoning with arsenic, mercury, lead, bismuth, etc.

Intravenous administration is preferable. For this purpose only a chemically pure, sterile sodium thiosulphate should be used. If such a preparation is not available, it may be given by mouth in doses of from one to fifteen grams in solution.

The technic of McBride and Dennie in a typical case of arsphenamine dermatitis is as follows: an initial dose of 0.3 Gm. is given intravenously; on the second day 0.45 Gm.; third day 0.6 Gm.; fourth day 0.9 Gm.; sixth day 1.2 Gm.; eighth day 1.8 Gm. This is usually sufficient for a severe case.

In acute bichloride poisoning the technic is the same except that in addition to the above 15 Gms. in a pint of water is given by mouth, followed by 1 Gm. t. i. d. As a rule, fewer injections are required for the mercury than for the arsenic poisonings and the results are even more striking.

Case Report

A colored man, age 37, was admitted to the hospital three weeks after his sixth dose of neoarsphenamine with a diffuse, weeping arsphenamine dermatitis involving entire body, extremities and face. The exudate was of such severity that the underclothing was kept damp and small droplets were constantly appearing on the face. The hands and feet were much swollen and showed numerous blebs a cm. or more in diameter. There was a well marked conjunctivitis. Temperature 103, pulse 108, W. B. C. 28,000.

There was no intravenous preparation of sodium thiosulphate available, so he was given an initial dose of 2 Gms. by mouth followed by 1 Gm. t. i. d. The following morning the temperature had dropped to 100, he was feeling much better, and his appetite had returned. At the end of forty-eight hours the temperature had dropped to 99 and the body was dry. The following day the temperature was normal, there was no moisture anywhere, and the hands and feet were beginning to desquamate. On the seventh day the conjunctivitis had disappeared and the patient was walking about the ward. Numbness and tingling which had been very troublesome soon after admission had also disappeared.

He was discharged on the eleventh day. At this time desquamation was complete over body and was well advanced on hands and feet. The general condition was excellent.

The W. B. C. were 28,000 on admission and dropped to 17,000 on discharge. The eosinophile count rose gradually to twenty per cent on the fourth day and dropped to normal on discharge. Small mononuclears were only seven per cent on admission, but rose to twenty-four per cent on the sixth day.

The urine showed neither albumen nor casts.

When this patient had been in the hospital about a week he suddenly developed a diffuse, chocolate pigmentation over the entire body

*Read before the Norfolk County Medical Society, May 12, 1924.

and extremities, most marked over areas most affected by the dermatitis. Now, after three months there is little if any change in its intensity. I do not believe this pigmentation can be laid to the treatment. In the literature of arsphenamine reactions it is repeatedly described and is mentioned by Cushney as a not infrequent sequel of chronic arsenic poisoning.

This patient remained in the hospital eleven days. The only other similar cases whose records are available have remained in the hospital about three months.

There is nothing specific about the so-called arsphenamine dermatitis. It has been observed following the administration of all the different preparations of arsphenamine and neoarsphenamine, following sodium cacodylate, small doses of Fowler's solution, following a single injection of mercuric salicylate, and a similar reaction after merely painting the skin with iodine.

Stokes and Keidel each report two cases of such reaction in which syphilis was known to be absent.

We may say, then, that this dermatitis does not depend on the kind or amount of the arsenic preparation administered, nor does it depend on the presence of syphilis.

Moore and Keidel report twenty-one cutaneous reactions in 47,000 injections. Stokes and Cathcart report thirty-eight reactions in 43,000 injections. These figures would indicate an incidence of one reaction in about 1,500 injections.

Reactions show no preference for either sex. However, they are about three times as frequent in the white as in the colored race.

There is a possibility that a defective lot of arsphenamine may be responsible for the reaction in an isolated case. Neoarsphenamine deteriorates decidedly after six months, and still more rapidly if kept at room temperature or higher. Age apparently has no effect on old arsphenamine. However, most authors are unable to demonstrate any connection between the reaction and a defective drug.

The hypotheses advanced to explain these reactions are about as follows:

(1) Toxic Action of Arsenic on the Bone Marrow

The most prominent feature of the blood picture of arsphenamine reactions is a marked alteration in all leucoblastic cells of the bone marrow. The lymphoid elements are usually unchanged. There is an absolute and a relative decrease in the polymorphonuclear neutrophiles which may go as low as 600 per cmm. Often these cells are unusually fragile. Eosinophilia is a frequent finding, ranging from five per cent to fifty per cent. There is often a marked increase in the large mononuclears which may reach unusual heights. There is usually no change in the red cells or the hemoglobin.

These blood findings are common to the milder reactions such as urticaria herpes, erythema, etc., as well as to exfoliative dermatitis, and have led to the belief that they are all members of the same general group.

We have just seen that damage to the bone marrow results in destruction of the normal phagocytic cells. It has been shown that when normal function of the bone marrow is interfered with, antibody formation is inhibited. Thus the normal defences of the body are lacking and these cases are left especially liable to infection. This is a frequent and troublesome complication of arsphenamine reactions. When it occurs a leucocytosis replaces the initial leucopenia.

(2) The Cumulative Effects of Arsenic

Just how long arsenic is retained in the body is unknown. It has been found in the urine ninety-seven days after its adminstration. It is assumed that if the permeability of the kidney is impaired, as by the simultaneous administration of mercury, arsenic gradually accumulates in the body till a toxic level is reached, and that the skin then takes on the function of excretion and the irritation of the drug produces the dermatitis.

There is no uniformity of opinion as to the presence of renal impairment. Moore and Keidel claim that there is more or less damage to the kidneys in eighty per cent of their cases. Stokes and Cathcart state that their patients who had cutaneous reactions showed no evidence of renal injury before the attack and that their worst case had not had mercury.

(3) Damage to the Liver

It is well established that arsenic does produce structural changes in the liver. Following arsphenamine poisoning autopsy has frequently shown acute yellow atrophy, central necrosis, or marked fatty changes. In one case almost two grains of arsenic was recovered from the liver. On the other hand some cases

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present no demonstrable evidence of liver injury.

Arsphenamine probably undergoes some modi..cation in the body. It quickly disappears from the blood stream, is deposited chiefly in the liver and is released in some form presumably less toxic than its original state.

Voegtlein finds that arsphenamine as such is not directly toxic for the spirochaete in the tissues of the higher animals. He believes that it must first be metabolized in the body to some active modification before it can exert its therapeutic action.

It is conceivable that if liver function is impaired, arsphenamine may accumulate in the liver, or it may be allowed in the circulation in some toxic form and lead to a reaction.

None of these conceptions are wholly satisfying since they do not explain recurrences after minute doses of arsphenamine.

(4) Hypersensitiveness or Idiosyncracy

Stokes is impressed with the association of focal infection with arsphenamine reactions in the sense that he is dealing with an already sensitized or unstable patient. Out of twenty-four patients developing reactions in which he had accurate histories, thirteen had had some form of dermatitis prior to coming to the clinic. In his series of thirty-three cases, twenty-seven had some focus of infection. The remaining six without demonstrable foci developed reactions of the mildest grade.

Attempts to remove foci during a dermatitis were disastrous. They were followed by a prompt flare-up of all symptoms, with fatal results in two cases.

A hypersensitiveness may persist for months or years after the original reaction has subsided, as shown by the occasional return of localized dermatitis. There is also a marked tendency for the rash to recur on further attempts to administer the same drug even in minute doses. One such recurrence is reported following the administration of less than four-thousandths (0.004) Gm. of silver arsphenamine.

The mechanism of arsphenamine reactions is not entirely clear. No attempt is made to explain all reactions as due to a single cause, but it is probable that in most instances we are dealing with a patient that is already hypersensitive and that arsphenamine is merely the factor that precipitates the cutaneous explosion.

Note

Since this paper was written we have had the opportunity to follow several cases of poisoning treated with sodium thiosulphate in other hands. A case of arsphenamine dermatitis, almost an exact replica of the case reported, received the same treatment and was well in ten days. Six cases of bichloride poisoning, with one exception, made prompt and satisfactory recovery. The fatal case received sodium thiosulphate when practically moribund five days after the ingestion of thirty-five grains of bichloride and died about twenty-four hours later. This case was considered hopeless when the treatment was given. In the other five cases there was a marked improvement over night, recovery was uneventful, only one patient remaining in the hospital as long as a week. No ill effects from the treatment were noted.

625 *Massachusetts Ave.*

ON THE MEANING OF DEMENTIA PRAECOX.*

By JAS. K. HALL, M. D., Richmond, Virginia.
Westbrook Sanatorium.

The term dementia praecox—I wish it might be replaced by good, simple American words—implies deterioration of all the immaterial attributes of the individual. It implies lessening of intellect, of feeling, and of spirit. The patient in the grip of the established malady is well on the way back towards that lower animal kingdom out of which the evolutionist tells us we have so slowly and so painfully come. We are not surprised by the appearance of evidences of mental failure in the aged, however much we may be distressed by the decay. No other condition, however, unless it be epilepsy, so tears at the heart-strings of parents as the gradual development of progressive loss of mind in a promising and a beloved child. It is a calamity so peculiarly distressing that it can be talked of by father and by mother only to their physician and to the God whom they worship. It is accounted by them life's greatest sorrow. It is looked upon as worse than death, because it is a long-drawn-out death of mind—and of personality—and—of their fond hopes. It is worse than terrible.

*Read before the Richmond Academy of Medicine, April 8, 1924.

Its cause or causes?—do I hear inquiry about its origin and the reasons for its development? Little of specific value is known of heredity in relation to disorders of the mind, but more than 50 per cent of all cases of dementia praecox have poor mental or nervous endowment in their immediate ancestry. But the affection may appear in one child in a large family, the others of whom may be not only normal but even brilliant. Contrary to public opinion, the affection is especially prone to develop in those in whom the mind is inherently weak. Acute illness may call it forth. Some of the stresses of life appear to induce it. I have little doubt that many of the mental casualties of war developing in young soldiers and referred to popularly as shell shock are, in reality, cases of genuine dementia praecox. Some undiscovered defect in make-up unfitted them for the instant and rigorous adaptations called for in war, and they have been added to the great human junk heap left by the military cataclysm. Childbearing and the care of baby after baby in rapid succession not infrequently seems to bring about this peculiar form of mental wreckage in young women. Poverty, poor food, stunted physical development, too much stress and strain in school, religious excitement, unhappy home-life, brutality of parents and bad upbringing, occasional injuries to the head, excessive indulgence in alcohol, the looseness and the unrestraint of the customs and the times in which we are living—all these unhappy circumstances are probable factors in the production of this wide-spread blight. The sexes are dealt with almost impartially. Most of the cases develop before the twenty-fifth year of life. When the road is open and straight before, and the journey has been well—sometimes brilliantly, begun—this great obstruction uprears itself, progress stops, and the backward journey is begun.

Recognition of the condition in its beginning is important. What signs, you may well ask, proclaim the stealthy approach of this dreadful malady? Oftentimes it comes as the further unhappy deepening of queerness in a young person who has always been more or less different from others—shy, seclusive, precociously pious, given to day-dreaming; one who has not joined heartily in the robust activities of boyhood or of girlhood. But not infrequently it develops in a young person who has enjoyed vigorous physical health and who has been free from eccentricities and well up to the mental normal. Occasionally praecox falls like a blight upon a student making a brilliant record in school or in college. The patient's first complaints, if there be complaints, often refer to some portion of the body—to some visual trouble, to digestive disorder, headache, inability to sleep, palpitation of the heart; reference is made often to the sexual organs, and fear about the condition of these organs is often sharpend by acquaintance with shrewd, quack medical literature. I have little doubt that an abdominal operation is sometimes performed as the result of the hypochondriacal complaint of a patient in the early stage of dementia praecox. Such hypochrondriases are so marked, at times, as to deceive the most careful. I know a patient in a state hospital at this time in profound dementia in whom praecox manifested itself first by complaint of visual disorder when the young man was a university student at the age of eighteen. Repeated eye examination found no basis for the complaint. The gradual development of frank mental disorder soon justified the diagnosis of dementia praecox. Such unhappy notions about the condition of some portion of the body exhibit themselves in the young person's mood. There is a noticeable, if not profound, change in personality. Abstraction, depression, a tendency to withdraw from companionship is the striking early feature of change in conduct. Loss of lively interest in matters that were formerly all-absorbing is generally striking—in studies, in play, in work, in plans, in hopes. Irritability and petulance are not unusual. Sweet-tempered consideration for others may be replaced by selfishness, roughness of behavior, profanity, violence, drunkenness, sexual assaults, thefts and other evidences of lack of normal self-control. I have known young people in the early days of this disorder to go to bed in a darkened room and to remain there week after week, covered head and foot, in confession, as it were, that the battle with life is already too much for them. A brief period of depression is undoubtedly common, but not infrequently there is early restlessness of mind and of body, and the boy or the girl who feels its irresistible urge cannot remain in school, in the home, or at work, and there may be incessant and purposeless wandering, especially at night. Sooner or later delusions express themselves in speech or in behavior. Generally, I am inclined to think, these early delusional ideas are depressive—

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there is the fear of disease of some part of the body, the soul may be lost, the girl may fear that she is pregnant, the boy may believe himself charged with a crime, the officers are coming for him, and he will be executed. Occasionally expansive ideas may be dominant from the beginning. One of my patients felt himself competent to invent a number of devices; another planned to take his fellow-students, with whom he appeared in a play at the close of school, on the road to give dramatic performances. Frequently imaginary voices are heard as the disease makes progress; sometimes these hallucinations are pleasant, the voices of angels or of God; more frequently they are the voices of enemies telling of poisoned food, the plans of the officers, and the purport of the law. Voluntary attention cannot be sustained; continuous mental work, consequently, becomes impossible; if the condition be unrecognized in school, punishment only aggravates the situation. Apparently unprovoked, foolish, silly laughter is an outstanding symptom, and causeless tears, unassociated with any deep emotional feeling, are another evidence that something has gone wrong with the normal connection between the emotions and the intellect.

The general symptomatology varies sufficiently to justify at least three groups of cases.

(1), Hebephrenia; (2), Catatonia; (3), The Paranoid Type.

The first group includes the majority of cases. The outstanding feature of this group is simple, more or less slowly progressing, loss of mind and of emotional activity, with comparative absence of active delusions and hallucinations. The catatonic group includes the most interesting and complex cases. Profound stupor, in which the patient may lie as if dead, speechless and unmoving, for weeks or for months, may change without a moment's warning into the most aggressively violent and dangerous behavior, or such a patient may suddenly become apparently rational, and resume approximately normal life. *The Associated Press* may pass all 'round the world, for example, the strange story of Lena Becham, who suddenly came out of profound sleep, from which none of the great specialists could wake her, got up and got breakfast and then went, her own sweet and well self, to the meeting of the Foreign Missionary Society. If a medical or a religious quack have charge of such a patient when the miraculous transformation takes place, his practice and his standing are immediately established; if a doctor be in attendance, the family may insist upon knowing why he did not give that particular medicine long ago, instead of making useless visits day after day. But the remission does not last, relapses take place, and the hope of the family, the charlatan, or the doctor, leads only to disappointment. The paranoid type of the disease is troublesome to manage. Here the intellect fails more slowly, ideas of persecution give trouble, law-suits may have to be defended, quarrels in schools and in churches are occasional unrecognized symptoms, and gross violations of law, assault, arson, or murder, call for medical interpretation.

In the developing stage of the disease the diagnosis is not easy, and time—sometimes weeks, more often months—is necessary for the formulation of a diagnosis for which there can be much respect. Simple-mindedness, hysteria, neurasthenia, peculiar types of epilepsy, manic-depressive insanity, paresis, sleeping sickness, brain tumor, and feigning for the purpose, all must be considered. No other condition in the domain of disorder of the mind presents such variable and ofttimes contradictory manifestations. The most careful, detailed, conscientious study of each case is absolutely necessary. But after the diagnosis has been made the prognosis—the outcome—can be foretold. In practically all cases dementia results—loss of mind, loss of emotional activity, loss of judgment, loss of memory, loss of yearning, loss of all the distinctive human attributes. A vegetative existence on the back wards of a state hospital—that is the final stage—scarred and marred, sand-strewn, barren, unproductive, like our own beautiful James River valley after a great flood.

But before the dementia has come, and before commitment to an institution has been made, while the individual is still a member of society, grave conflicts may arise. In the home the patient is likely to be a source of anxiety, if not a real menace. In school the praecox patient cannot adjust himself, and he can make no mental progress. His occasional truancy, unmanageableness, badness, or stupidity, may be unrecognized as first evidences of the on-coming dementia. In industry, where skill and judgment are necessary, such an unfortunate can make no progress, and he

seeks job after job, because he is mentally unable to make good. Occasionally these dementing youngsters enter upon a professional career, and the ministry, probably because of its emotional appeal, not infrequently, it seems to me, calls alluringly to them. The very nature of their affliction makes it impossible for most of them in the outside world to make the conventional adjustments, and they frequently violate the law—generally out of genuine stupidity; but, often, with a great air of braggadocia, they disregard the prohibition law, show no respect for traffic regulations, and are brought to the bar as speed-demons. Many of them—may God forgive our ignorance and our stupidity—find their way to the chain gang, the jail, the penitentiary, and some of them undoubtedly sit for a brief, final moment in the great, wooden chair in the penitentiary.

Is some one making inquiry about treatment? If the offspring could make choice of ancestry how many men and women would remain unwedded, and how many married would remain childless? Of all the animals that walked down out of the ark what others breed with such recklessness as the human? Preventive treatment should begin, as Oliver Wendell Holmes long ago said, centuries before the individual's birth. Figs cannot be gathered from thistles. But if bad parentage be not avoidable, bad upbringing may be; the young person in whom praecox tendencies are showing themselves should be cautiously educated—slowly, carefully, and prize-winning efforts should not be encouraged. Manual training is less taxing and more fitting for such an one than intellectual. The mental tip-toeing called for in preparation for a professional life is apt to end disastrously. Such youngsters as are liable to develop dementia praecox should be kept out of war. They are being added in large numbers to our present pension rolls. They are, likewise, unfitted to delve into the profound things of life—such, for instance, as religion, and other forms of philosophy. Their mental diet should be plain and simple and easy of digestion. After the attack has come attention must be paid to what mental remnant is left—and it should be trained and made use of. Further deterioration is hastened by idleness. In state hospitals many of these cases who have come down in mentality to a low plane live rather useful, fairly productive lives. But their hands must find simple, uncomplicated work, and it is better for it to be in the out-of-doors; and their bodies must go and come in response to the sound judgment of another. In the low grade of dementia which many of these patients reach there can be no sort of purposeful activity.

But is no word to be said, does some one ask, about the meaning of the malady? Would you have me speak no longer in terms of medicine, but in the vernacular common to the times? Must I attempt to define the affection, not in words, but in terms of dollars and cents? The fiscal year of the state institutions for the care of the mentally abnormal closed on September 30th in Virginia. During that twelve-month period there were admitted into the three state hospitals for the insane 1,368 patients; and into the colony for the epileptic and feeble-minded 190—a total of 1,558 mentally unsound people, placed by legal commitment under the care of this state.

Dr. W. F. Drewry, until recently for many years superintendent of the State Hospital for the colored people at Petersburg, tells me that at least 30 per cent of these admissions are cases of dementia praecox. That statement means that during the last fiscal hospital year about 370 individuals afflicted with this poorly understood mental malady became wards of Virginia. At the close of the last fiscal year the total population of the state hospitals and the colony for feeble-minded in Virginia was 5,872. If one-third of these patients have dementia praecox that means that almost 2,000 cases of this affection are at present under the care of the state.

The average annual cost of maintaining a patient in a state hospital cannot be—it certainly should not be—less than two hundred dollars. The praecox admissions alone to the state hospitals in Virginia each year cost the state treasury no less than $75,000; the annual maintenance of all the precocious dements in all our state hospitals in Virginia costs the taxpayers little less than half a million dollars. The loss in productivity in the state on account of the helplessness of these sick folks would surely amount to little less than a million dollars. The average life of a praecox patient in a state hospital is about twelve years. This statement in terms of money means that the State of Virginia spends on each of her citizens that develops this malady no less than twenty-five hundred dollars.

In the United States there are about two hundred and fifty thousand insane people confined

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in the various state hospitals. Probably ninety thousand of this number have dementia praecox. The annual cost of caring for this army of insane people cannot be less than twenty-five millions of dollars. The cancer patients—most of them—die; the tuberculous are often saved; pellagra is no longer a scourge; but the praecox patients live on year after year and many of them reach comparative old age. They remain more or less permanent, unsolved, expensive, state problems.

Would you ask me what the affliction means in loss of manhood and of womanhood to the state? Would you ask me what it means in loss of parental hopes; would you inquire of me how the mother feels whose child has gone from her not to return again? Surely you would not! May I ask what medicine, what the state, what our great institutions for the treatment of diseases of the mind are doing to find out what this affection really is? Is there any research bureau in this state grappling with the problem? Will the valley of dry mental bones remain dry, or will some Jenner or Pasteur come and look upon them and breathe into them again the breath of life? Or shall we sit unmoved, effortless and hopeless, and chant with the old Persian poet—

"The moving finger writes and having writ,
Moves on: nor all your piety nor wit
Shall lure it back to cancel half a line,
Nor all your tears wash out a word of it."?

TREATMENT OF APPENDICITIS IN CHILDREN.*

By B. M. BAKER, M. D., Norfolk, Va.

At the February meeting of The Norfolk County Medical Society, I was asked by the Chairman of the Surgical Section to deal with this feature of appendicitis in children, as my part of a symposium.

I must say that I found myself somewhat embarrassed when I realized that I would be expected to find enough to say to keep the attention of my hearers for the allotted time of fifteen minutes. In turning over the matter in my mind, I was sure that some reasonable digressions would be necessary, and I must ask your kind indulgence, now, as I did my audience when I read the paper.

On one occasion, while visiting The Massachusetts General Hospital, in Boston, and, while talking to a friend of mine who is on The Staff (a man occupying an enviable position in the surgical profession of that town), he rather jokingly told me he had been consulted by an anxious mother about her young daughter, and, after a thorough survey and investigation of the case before him, he turned to the mother and said, "I am at a loss to know whether we are dealing with appendicitis or pneumonia. I will take out the appendix, and, if it turns out to be pneumonia, I'll turn over the patient to the Pediatrician to care for." This is rather radical, but it will make a good text.

Some, if not many, of my hearers have heard of stories told about one of the most honored and beloved members of our profession, when he was called upon to see (in consultation) two babies. In both cases appendiceal disease was suspected. In the first case, after an exhaustive effort made to solve the problem, and failing, he refused to operate and left the child, only to have a 'phone message the next morning to the effect that the appendix had ruptured and the child had peritonitis. In the second case when he *did* operate, contrary to his best judgment, because of the local man's insistence, he found a normal appendix. When he 'phoned the following morning, his consulting confrere told him that the child had broken out with measles.

I have little sympathy with the man who can diagnose easily and accurately, in a child, the exact pathology present in a given case of abdominal disease, and less with the one who claims that he can tell the exact stage of an inflammatory process present, at a given time from the symptoms and examination: that is to say, tell definitely what is the exact status of the infection, whether or not it has advanced to the stage of necrosis or abscess, and, if so, that it is or is not localized. I have much more respect for the fellow who is satisfied to differentiate appendicitis from other diseases in the child, notably, pneumonia, the exanthemata, functional digestive disorders, perhaps mastoid disease. A child vomits easily, has fever with everything, always has pain in the middle of the abdomen when sick, the pulse is always fast, blood pressure and blood picture oftentimes unreliable, rigidity of abdominal muscles hard to make out at times, and local point of tenderness uncertain; not to mention the fact that the patient is a child and that the facies does not always tell a true story. If, with some of the above mentioned symptoms present, you can be rather

*Read at a meeting of the Norfolk County Medical Society.

certain of local rigidity with the right thigh flexed, you have, in my mind, rather satisfactory evidence of the presence of appendiceal disease.

But, these things being put aside, for I was not asked to talk about them, and a diagnosis having been skillfully and accurately made, as set forth by my predecessor, I want to say that the way is clear and there is but one way. Apropos of my position in this matter, as my daughter used to say when a child, "Let me tell you a little 'tory about me." Some years ago, I was called to see a negro woman living in an alley, who was propped up in bed and fighting for breath. After investigation, I found that the cause of her fearful condition was the presence of an enormous abdominal tumor, solid and attached to the uterus. At my suggestion, she promptly offered to go to the hospital to be relieved of the offending foreign body. She was promptly taken to the operating room where, with the aid of my dear friend, Doctor Augustine Tucker, (now in China) straddling the operating table, and with the aid of a large double clamp of the ice-tong variety, I was able to raise up the tumor sufficiently to tie off the many attachments to other organs, and remove it with the uterus. The mass weighed twenty-two pounds. She was at once relieved of her embarrassed breathing and made a satisfactory recovery. After she got well, I asked her why she so promptly responded to my request that she go to the hospital for treatment and she replied: "When I axed you whut you gwine do,—Lor' Doctor! You ain' nebber say but *one* thing; you ain' nebber say nothin' but *'take it out'* an', Gawd knows, t'wan't nothin' else fer me ter do. You know Mis' Gordon;" she went on, "she dun sent 'nudder doctor down ter see me. He com in an' look at me an' put his han' on my stomick, an' den he shuck his haide side-wise. Dat's all he dun, and I wuz glad when he wuz gone, caze I did'n' want nothin' ter do with no doctor whut shuck his haide side-wise. How'd you like ter go ter sea in a boat with th' cap'n skert 'fo he lef' de landin'?"

So, gentlemen, I say to you, with your diagnosis made and thinking that your baby has appendicitis, there's but one thing to do; don't shake your head side-wise, but take it out. The baby or child with appendicitis, let it be of the acute, sub-acute or chronic variety, is in danger. Of course, the danger is increased by the acuteness of the condition. Lymphoid tissue being especially abundant in the appendix of the young, the tendency of inflammation to progress rapidly makes this danger, therefore, greater. There should be no waiting for anything. Two hours may mean the difference between a swollen appendix and necrosis.

What I have said might be enlarged upon indefinitely but the story would be the same. One might far better take out a few appendices in children that might well be left, as did my friend in Boston, than to let one baby die from appendiceal peritonitis because symptoms were not those of a perfect picture of the disease. Operate, and that quickly. Do not go to bed and wait until morning. Remove the appendix and drain, as indications require. In draining, drain thoroughly; added to the above treatment, use Fowler's position, and opiates; and stimulate with water, glucose and soda, as indicated.

Partial Histories and Reports of Three Cases in Point Recently Operated On.

First case. — Baby Nancy. Twenty-five months old. Personal and family history, negative. Baby well, except for being rather constipated, when taken suddenly ill with vomiting and slight pain in stomach.

The child was first seen Saturday night, August eleventh, three hours after onset of symptoms, with no definite findings, upon examination. There was no tenderness over the appendix, though child was irritable and restless and resisted abdominal palpation. By diverting the child's attention, deep abdominal palpation was done without evidence of discomfort.

A slight cathartic was ordered and an acetone diet prescribed.

Sunday, August twelfth, the parents reported by 'phone that the child was better after good bowel movements, and that all vomiting had ceased. The patient was not seen again by the Pediatrician until the morning of Monday the thirteenth, when vomiting and pain had returned and the baby was quite ill. A surgeon was at once called in. An operation was done promptly, because of general rigidity and tympany. A ruptured appendix with general peritonitis was found.

Second case.—Lafayette. White. Male. Six years old. Past history and family history, negative.

This child was taken sick on Tuesday, No-

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vember 13, 1923. There was slight pain in right lower abdomen and vomiting several times during the next three days. At 7 P. M. on November sixteenth, the pain became more acute and another doctor was asked to see the patient.

Fearing serious trouble, the child was at once hurried to the hospital, where his temperature was found to be 101 degrees and pulse 120. He was suffering from lower abdominal pain; the abdomen seemed slightly tender, but there was no rigidity. The abdomen was so relaxed that one could, definitely, make out a mass in the appendiceal region. Blood examination showed 18,000 white cells and 81 per cent polys.

The abdomen being opened, a tumor was found made up of the ruptured appendix. omentum and mesentery. The abscess had not come through to soil the abdomen, which accounts for the condition mentioned above. The tumor was removed, and, as a safeguard, a cigarette drain was left in the abdomen for three or four days.

Third case.—Frances S. Eight years old. Healthy parents and brothers all living. Past history, whooping cough, measles, mumps and pneumonia.

The child was taken suddenly ill on the afternoon of May twentieth, with pain in right, lower abdomen, constipated, and, added to this vomiting. She was brought to the hospital at 9 o'clock the same night, and a blood picture was made. This showed 17,000 white cells and 73 per cent polys.

I was asked to see the child at 10:30 P. M., and although she had had no opiate of any sort, I found her lying on one side with the right thigh flexed, and sleeping peacefully like a healthy child. With history and picture before me, I thought it best to wake her up, and, finding the abdomen slightly distended and rigid (with thigh flexed, as stated), I deemed it wise to take out the appendix before going to bed. Upon opening the peritoneum, I found a sero-sanguinous exudate. The appendix was very large, very much inflamed, covered with cheesy exudate and distended almost to the point of rupture.

I must say that the story is almost unbelievable; that is to say, waking a child out of healthy sleep to find such a condition.

With proper drainage, this patient made a satisfactory recovery.

303 *West Freemason Street.*

BACKACHES OF KNOWN AND UNKNOWN ORIGIN.*

By C. B. GREEAR, M. D., Honaker, Va.

While men labor and women travail, that long will backaches play an important part in the numerous problems confronting the general practitioner.

This class of patients are learning also to go to the Orthopedic Surgeons, or else call on the Chiropractor and others of his class, largely because the man in general medicine has not given this phase of his work a sufficient amount of study. We are too often negligent of our own interests and grossly careless with the traditions of the greatest pioneers in the practice of medicine.

This going to distant points for medical services which should be rendered at home, if considered from an economic standpoint only, results in losses of marked proportions, not only to the patients, but also to the physicians and their respective communities. Transportation expenses alone, in many instances, would renumerate the physician handsomely, leaving the service fee as a potential loss to all parties mentioned, except gentlemen with an already adipose bank account.

When Mr. Blank goes to a distant city for services, he goes to withdraw from his banker or friends a goodly number of eagles ,and an extra supply of eaglets with which to defray the incidentals, each of which sail rapidly away as if on wings of the morning, never again to return to their native haunts. Mr. Blank frequently returns a wiser, but poorer man, all because his family physician had neglected an adequate amount of painstaking study. Generally speaking, the laity is made up of good sports. They enjoy good shows, and it should not be necessary for them to pay $5.00 per seat in peanut galleries of the cities when equally good performances can be given at home for 50 cents per parquet seat.

Referring to the specialites, I am sometimes caused to wonder if it is laziness or necessity that makes many of us become possessed of a desire to become specialists. We concede the fact that some of the specialties are an actual necessity, while others could and should be dispensed with. The family physician and Dobbin often serve the purpose of a clearing house, without any compensation whatever except the pleasure found in doing gratuitous work.

*Read at the meeting of the Russell County Medical Society, April 10, 1924.

In order to make a logical approach to the subject under consideration, a brief anatomical review is highly important. The pelvis is so called because of its resemblance to a basin. It is made up of four bones, the sacrum, the coccyx and the two innominate bones. The sacrum and innominates have well defined articular surfaces and are held in position by anterior and posterior ligaments, permitting of a limited amount of motion, for which reasons sacro-iliac strains become possible. The coccyx and the symphysis are movable only under unusual conditions and are therefore less subject to trauma and strain. Looking at the pelvic bones with well defined articular surfaces, angles and delicate curves, we are caused to wonder at the marvelous workmanship of an all wise Creator. At points where great strength is required there is an increase in width and breadth and at points where support is necessary there is correspondingly an increase in the angularity.

The spine and sacro-iliac articulations are not unlike those of the shoulder joints in the fact that they are held in place by ligaments and many strong muscle layers, the names of which we once pommeled our brains to remember and have long since forgotten. The shoulder and sacro-iliac joints are dissimilar in the fact that, in addition to being subject to trauma, the sacro-iliac and spinal articulations are subject to hosts of diseased conditions from within the body. When given close study, the wonder is that all of us are not afflicted with one or another form of backache.

Clinically and briefly speaking; Mr. B.—tells us he broke down in his back while lifting a small log, after which he was confined to bed most of the time for six weeks; that ever since then he has had trouble with his back and breaks down once or twice each year when lifting even small loads.

Mr. J.—was holding a log with a cant hook when it ran on him and hurt his back. Since then he has never had a strong back.

Mr. S.—advises us that while catching a sheep running past him, he wrenched his back and had to remain in and out of bed for about three weeks, after which time he limped about with canes and crutches. He has had to be careful about lifting or straining his back ever since.

Any of us could review countless numbers of such histories, had we made notes on them, and the three mentioned would be similar in many of their characteristics. Upon close inquiry we will in a vast majority of these cases find the pain is not centrally located but is on one side, and more often over the sacro-iliac articulations. This would lead us to the conclusion that many of these so-called backaches are not of the back at all, but are strictly sacro-iliac in their origin. In a comparative study of the spinal and the sacro-iliac articulations, we will readily conclude, the latter is much weaker of the two articulations and therefore is much more subject to trauma and strains than the former. The spine has great fortifications of muscle posterior to it, in addition to the anterior and posterior spinal ligaments, making it a master column of giant strength. The same is not true of the sacro-iliac articulation; the ligaments and muscular attachments are in large measure at right angles to each other, with some slight variations to perhaps 45 degrees. This, we readily observe makes the sacro-iliac joint more subject to luxations and strains. True, the sacrum is wedge shape, the tip of the wedge being that of the articular surfaces and thus adds much to the strength of the articulation; yet with heavy weights being lifted with the upper extremities, sudden twists, etc., it is a wonder, as previously stated, that we do not all have more so-called backaches which are in reality sacro-iliac strains.

Frequency of Backaches

Because of the anatomical and physiological characteristics of woman, she is more subject to backache from internal conditions, speaking in general terms. With men the opposite is more generally true, the majority of their backaches being due to external causes.

The great frequency of backaches in women is proverbial with every practitioner of medicine. The pain varies from very mild to the most intense in character: when of the latter type women are completely incapacitated for their usual vocations.

Causes of Backache

These should be divided into two general classes: External, to include trauma of every type; Internal, to include all those having their origin within the body.

For a more intensive study of backaches peculiar to women, the etiology should be further divided into groups about as follows: Those of men to be included in groups 2 and 3 only.

Group No. 1. This should consist of all those associated with a complicated and an uncomplicated pregnancy.

Group No. 2. This should include lumbago, sacro-iliac and spinal strain, neurasthenia, trauma, acute infectious diseases, cerebral, thoracic, abdominal, pelvic, genito-urinary diseases, etc.

Group No. 3. This should include all of idiopathic origin; and there are not a few of them.

In commenting on the groups, will say with reference to pregnancy of group No. 1; there is always a marked physiological relaxation of the entire body. This relaxation along with the rapid increase of the weight of a growing foetus, predisposes the woman to a proportionate increase in the severity of the backaches and with some, the relaxed state is much greater than with others, thus accounting for the fact that some women suffer with the back more than others while in a pregnant state. The centers of the reflexes controlling the sexual organs, the act of defecation, urination, all being located in the lumbar portion of the spinal cord, add much to the irritability of the entire sacral region, thereby much augmenting the pains the pregnant woman must endure.

With the menstrual group, the physiological relaxation is not so marked and it varies with different women. Reflex irritations are very prominent symptoms of these patients, making drug and alcoholic addicts of some where these remedies are promiscuously administered. Others become chronic neurasthenics of one type or another. The predisposition to neurasthenic conditions appears in about the same ratio as that of the general health status; however there are exceptions to all rules. Often young healthy appearing girls writhe in the agony of menstrual pains, wondering why a just God permits them to suffer in such an unspeakable manner.

In group No. 3 of idiopathic origin the backaches often play a prominent part. Most of the back pains are reflex in character and result from the presence of toxic substances in the blood current. The toxic agents add materially to the irritation produced by the highly developed reflex centers located, in the cauda equina and the sacral plexus.

With the idiopathic group, there is much for the pioneers in pathology to explore. Numerous backaches have no visible etiology and it is to this class of patients we owe special consideration in our attempts to reach a diagnosis.

Treatment

This must all depend on the specific etiology in each patient. The numerous pathologic conditions productive of backaches make the question of treatment depend on the respective diseased processes resulting in the backache. Without attempting to suggest a type of polypharmacy best suited to either type of backache, the thing I would like to emphasize is the very great importance of locating a definite etiologic factor underlying the separate and individual backaches, after which the most appropriate course of treatment can be prescribed.

Prognosis

Much of this will depend on the skill, or lack of it, on the part of the physician in charge, in having located, or not located, the cause of the condition.

A conversation between Jiggs and his physician is suggestive:

"Dr.—I just dropped in to see how you are feeling this morning.

"Jiggs—I am not feeling well enough to pay you, I can tell you that.

"Dr.—Well, I expect you to pay your bill.

"Jiggs—Yes, and I expected you to cure me—but look at me—I am about five minutes ahead of the undertaker.

"Dr.—But my good man—you didn't take my advice.

"Jiggs—I'll admit that and therefore I don't owe you any thing." The doctor fainted, of course.

The physician not guilty of careless diagnostic methods shall be allowed to cast the first stone.

THE TREATMENT OF PYELITIS.*

By ROBERT C. BRYAN, M. D., F. A. C. S., Richmond, Va.

In the consideration of the treatment of pyelitis it may not be inadvisable to take up hurriedly the anatomy of the parts entering into the question. The ureter, a mucous tube of about sixteen inches in length, in its excursion downward, is tangent to or slightly external to the transverse process of the lumbar vertebra; it then crosses over the pelvic brim at the sacro-iliac junction and, sweeping somewhat outward to gain about an inch of the spine of the ischium, curves symmetrically inward to the floor of the bladder. When we recall that the ureter and kidney arise as a tubular diverti-

*Read at the meeting of the Walter Reed Medical Society in Newport News, Va., May 14 and 15, 1924.

culum from the Wolffian duct, and that in its development it must rise over the brim of the pelvis to seek its ultimate bed, we can appreciate the possible pathology which may arise in congenital kinks, twists or extraperitoneal adhesions which would ultimately have an influence upon its normality. The pelvis of the kidney, holding normally about 7 c.c., has the point of outlet a little below its center so that there may be, through gravitation, an accumulation in the lower calyces; although the muscular wall of the ureter extending upwardly and continuously with the rim of the pelvis of the kidney tends to empty this cavity by its rhythmic milking contractions which are constantly going on in health. Conditions primarily favoring retention are a restriction of the normal caliber, or a stenosis of the ureter, arising from well defined causes, either from within or without the tube, and again this state of affairs may be congenital or acquired. Congenital anomalies would be evidenced particularly in (1) congenital stricture of the ureter, so ably discussed by Hunner, and in (2) aberrant arteries to the kidney which are found in quite a percentage of all cases, this latter condition acting as an arm or barrier constricting the pelvic rhythm, and angulating the ureter so that there is a mechanical congestion and failure of correct drainage. Some other factors that may be mentioned are general visceroptosis, nephroptosis, salpingitis, carcinoma of the cervix and uterus, tumors of the ovary, peritonitis and extraperitoneal glands pressing upon and embarrassing the normal peristalsis of the ureter. We cannot in the discussion of the condition of pyelitis take into consideration all the various anatomical structures and histology of the kidney proper. This would require a too exhaustive presentation but it has been well shown that the circulation of the pelvis is in direct communication with that of the parenchyma of the kidney so that a disease of one of these organs may be very easily transmitted to the other. It is well known likewise that in all infectious diseases such as pneumonia, typhoid fever, scarlet fever, flu and septic states, the kidney is the gateway through which myriads of germs are constantly finding the outer world, and the highly organized caudate epithelial lining of the pelvis resists infection in a wonderful way, so that in cases of long illness there may be no appreciable damage to this organ. As an instance of this, bacillus typhosus is found during convalescence in the urine of from 20 to 30 per cent of patients with typhoid fever, and its presence causes little more than a bacteriuria.

The etiology of pyelitis could be discussed at length. Arising usually out of a clear sky it strikes vigorously and savagely. An intimate study of the history may give no clue, no tonsillitis, furunculosis or suppurating wound, no unusual exposure, cold or fatigue. Probably a slight constipation and headache for a day or so precedes the very high fever and prostration which is seen regularly in the earlier stages of the acute process. The patient has no local pain, although later the frequency of urination (nature's effort to rid the body of irritating products) may be the one and only disagreeable symptom. We do not believe this is due to a cystitis, as the bladder is most resistant. It may be that deep pressure in the costovertebral angle gives some slight pain. The leucocyte count at this time is high, and the polynuclear relatively high, remaining so for several days. Just now we like to use colonic irrigation along with the hypodermoclysis, as 90 per cent of these cases of pyelitis are due to the colon bacillus and its hasty removal would certainly be indicated. Although almost any type of bacteria may be found producing pyelitis, according to Daniel, the most frequent are the staphylococcus, streptococcus, diphtheria, pneumococcus and influenza. If the mechanical state of congestion, stagnation, improper or insufficient drainage is now added to this bacterial contamination, that condition known as pyelitis arises with its insidious manifestations. During the throes of the acute inflammatory process there is a progressive pathology of cellular cloudy swelling, edema, and restriction of the ureteral caliber, so that indeed a vicious circle seems to have been established; the more the irritant, the greater the response; the greater the response the more the congestion and failure of elimination. One does not have to look far afield to appreciate the origin of pyelonephrosis, suppurative nephritis, the pyemic kidney, or even that rather rare state known as the solitary carbuncle of the kidney arising from a moderate pyelitis which may have been experienced some time previously.

As an indication of the influence of constant pressure on the ureter, the pyelitis of pregnancy is one of the most distressing phenomena that arises. We do not care to state categorically whether this state of affairs is produced

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by actual pressure upon the ureter or whether the pelvic fullness so angulates the ureter that there is a passive edema spelling congestion and retention, but there is a remarkable adjustment and compensation to the rapidly enlarging uterus throughout the early months of pregnancy by an increased peristalsis of the ureter, and it is only at that time, when the congestion and uterine enlargement become so great that stagnation occurs and infection shows itself, that the condition of pyelitis is established, and associated with this, doubtless, a low grade ureteritis is constantly found. The ureter is uniformly enlarged, its lumen considerably increased, the mucosa thickened and heavy, with considerable mucus and debris. Fluoroscopic investigation or ureterograms at this time with the use of sodium iodide or bromide shows great distention of this tube above the point of constriction, which is uniformly at or above the pelvic brim, and there is usually a sharp angulation or kink of the ureter at the pelvo-ureteral juncture which is caused by renal dislodgment and further aggravates the condition. The consequent distention of the pelvis and flattening of the calyces by pyelogram emphasizes that there must be a well defined renal insufficiency going on, as has been shown in progressive types of hydronephrosis by Hinman, of San Francisco, in which the arteriae rectae are attenuated and thinned out, the blood supply diminished, and the by-products of metabolism retained in progressively increasing amount. It is surprising the enormous distention that the pelvis may assume, 100, 150 to 200 c.c., a gradual compensating dilatation adjusting itself in a most beautiful mechanical way to the gradually increasing distal resistance. But it is only a question of time before this stagnation spells infection. The hydronephrosis goes on for months unrecognized and untreated. With the onset of chills, fever, pain and urinary findings the diagnosis is clear. Catheterization clears up the septic state almost immediately; the flow through the catheter is under heavy pressure. The usual flow in draining a normal pelvis is somewhat like this, 2 stop, 4 stop, 7 stop, 1 stop. With marked renal glaucoma we have seen as high as 90 drops following in rapid succession before the interruption of the flow occurred. The urine looks cloudy and flocculent; there is evident pathology. What is the significance of this? Its definite association with eclampsia is a pretty question, for I believe there are two varieties, the hepatic and renal; the hepatic type characterized by necrosis of the lobules and profound toxaemia, the renal by evident kidney insufficiency, edema, retinitis and high urea retention. In either event drainage, permanent drainage, prolonged drainage is in order. Whether the clinical evidences are along the side of pyelitis, with temperature, frequency of urination, cellular elements in the urine, distress over the kidney, or the pathology of back pressure on the kidney substance is so great that the by-products of metabolism are dammed back by this renal glaucoma so that the condition of kidney eclampsia is started, would seem to be a personal equation of individual resistance. The writer has had the opportunity to see a fair number of cases of the pyelitis of pregnancy and it is surprising what permanent catheterization of the ureter does. A large catheter must be used, Nos. 9, 10 or 11 French, and left *in situ* 24 to 36 hours. There may be some resistance in the lower part of the ureter in catheterization with so large a tube, but this is readily overcome and with no permanent damage whatever. After its introduction, the catheter may get plugged up with inspissated mucus and has to be watched constantly. Irrigation easily starts up the flow again. The catheter is removed as stated in 24 to 36 hours, the kidney allowed to rest, and it may be reinserted at intervals throughout the following weeks. Nature's cure for this progressive intoxication from renal back pressure is abortion. I wonder how many times it is done by nature to save the patient's life. Copious water drinking, proctoclysis and hypodermoclysis should be pushed to the limit only when the kidney is being drained, for otherwise there would be an aggravation of the pelvic tension. The writer prefers hypodermoclysis as a kidney stimulant and cleanser to any other method of water intake. It is surprising how much the tissues can take up, day after day, under the skin, with only the best effect, no abscesses, pain or other complications. We usually start with the bilateral flow "Y tube" under both breasts, and give 1,000 c.c. the first day, this takes about two hours. We have in certain instances given 600 to 800 c.c. daily for three to four weeks and seen nothing but the happiest results. There is but little if any pain, although the heart, lungs and extremities in older patients must be watched for edema or distress. Apparently, the edema in a male patient starts regularly in the scrotum and we take this to

be a good index of the body tolerance. Considerable attention is paid to the appearance of the tongue and we continue the hypodermoclysis invariably until the dried hard furred organ becomes soft, red and moist as a "hound's tongue." We use saline solution or plain water. Glucose solution is not taken up painlessly under the skin and in acidosis the sodium bicarbonate and milk sugar treatment are better given in the rectum, the hypodermoclysis being directed particularly for renal stimulation. If the water is well tolerated by mouth, six to nine quarts should be taken in the twenty-four hours; one tumbler every thirty minutes will figure up to about seven quarts daily. The patient may rebel somewhat at first, soon they become accustomed to it, and later beg for their plain, unmedicated spigot water. Urinalyses frequently taken show a progressive disappearance of the pus, from 250 to 500 white blood cells to the high power field, they rapidly diminish to 20 to 30, a natural and predicted result from pelvic flushing religiously and relentlessly carried out. It may be at this time some urinary antiseptic may be given. The writer prefers helmitol. It is claimed to be twice as strong and less irritating than the other formalin liberators and, like urotropin, formin, cystogen, etc., should be given only in an acid urine.

Right here the question of right-sided pyelitis may be discussed, for an overwhelming per cent of all cases are seen on the right side. We recall the anatomical relationship of the transverse colon to the lower anterior pole of the right kidney. Transmural bacillary infection by blood or lymphatic routes is not improbable particularly when there is a ballooning of the pelves, an abnormal distention and retention which is the moving factor in hydronephrosis. Again the dislodgment of the right kidney downward, angulation of the renal vessels, slowing of the blood current, all tend to further augment the congestion and stasis which predispose to infection. What percentage of these cases of marked renal stasis are the hotbeds in after life for stone formation? Why is it that stones occur in greater frequency on the right side and in multipara? We believe that some of these etiological factors are answered above by the normal anatomical relationships of the structures. Turning the patient in bed so as to take the pressure off the affected side, restricted diet and saline catharsis, with repeated and gentle irrigations of the pelvis, using a mild solution which is designed to have more effect as a purifier and cleanser than upon its antiseptic properties is in order. We prefer boric acid, saline, sterile water or very weak permanganate of potash. In the very chronic long standing cases we use stronger solutions such as $AgNO_3$, argyrol and the various silver preparations, with mercurochrome 220, 1-1000. In more marked cases in which the kidney substance is being involved and there is a septic state, as would be shown by the phthalein test, increased urea retention and urinary cellular elements, abortion may have to be considered, as we do not believe ureterostomy or nephrectomy are justifiable except under the rarest conditions.

A strict analogy of this pressure state is seen in prostatic hypertrophy in old men in whom for many years the kidney pelves and ureters have well compensated. There is a gradual flattening of the calyces and the usual attenuation of the arcuate arteries. Not infrequently following suprapubic operation or even immediate catheterization to relieve acute retention, there is a distressing and immediate coma arising, in which the condition is directly traceable to a suffusion of the kidney from a sudden release of back pressure. This may terminate fatally. Graduation of the bladder release, a slow adjustment of the renal pressure to the new state of affairs, is to be carried out scientifically and with considerable deliberation. What an extremely interesting balance and counterbalance exists between the renal blood pressure and distal obstruction. The old man brought in with acute retention has been having urinary insufficiency for years, the balance and associated renal pressure is so accurately adjusted that the higher faculties are in perfect co-ordination, and yet with the relief of this surgical state as we stated above, uraemia is abruptly instituted and a fight is on to save the patient's life.

It may be pardonable to digress for a moment to bring up the question of what is called idiopathic hematuria. It would be interesting and instructive to get accurate figures as to how many of these cases had formerly experienced a pyelitis, which left scars as a pyelitis granulosa in which the lymphoid tissue became considerably injected here and there, and in later years underwent a fibrosis which produced varicosities in the pelvis, which burst on some occasion showing itself as a hematuria. We recall several cases who applied for treatment. Pyelogram, urinalysis and Wassermann were

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negative. The origin of the blood was located by catheterization. Irrigation with adrenalin on one or two occasions was attended with a very happy outcome.

Just here we would call your attention to the appearance of the ureteral ora in cases of pyelitis. It must be recalled that the visible ureteral mucosa is that of the bladder, no two ureteral ora are any more exactly alike than any two faces; indeed they seem to possess special characteristics and a distinct individuality. Situated at or near the interureteral bar as slits, dimples, streaks, holes, pockets, protrusions or eminences, their absolute normality may be so pronounced that they can be recognized only when they open up to expel the urine. Under such conditions we unhesitatingly pronounce them normal, absolutely normal, and feel well assured that no purulent process above can be pouring its irritating products downward, constantly bathing the mucosa, with no ill effects whatever on the vesical mucosa. It must be borne in mind, however, that an old pus kidney in which the purulent matter is so heavy and tenacious that the lower segment of the ureter is plugged, may give an ureteral os with practically a normal appearance. The significant factors in these cases are the stellate strutting mucosal vessels seen radiating out from the ureteral os, the zone starting a few mm. from the actual crater. The crater is whitish, anemic or indeed a little puffy from the irritation of the retained products in the ureter which stimulate the muscle of Bell and the vesical segment of the ureter into a moderate degree of tonic spasm. By cystoscopic examination then the character of the ureteral os determines immediately the affected side in pyelitis for, although we may have made the diagnosis of pyelitis from the temperature, the urinalysis, the frequent urination and distress, in most instances, no clue whatever is given by the patient as to which side is involved. If one mouth is involved, and is reddish, pouting, with the inflammatory zone radiating from the ureteral crater, this is the side to be treated, and the other side presenting no such picture is to be emphatically left alone. There can be no justification for sending a catheter through an infected medium into a struggling resisting field which gives no clinical evidence of contamination. We recall many various characteristics of pyelitis of the usual type, the type unattended by pregnancy. The act of catheterization produces no actual pain but may be uncomfortable (we never use a general anesthetic and only in the rarest instances cocaine or novocaine), and the flow may be tardy due to inspissation and cellular agglutination. The larger the catheter, the easier the drainage; the urine may come away freely, highly charged with cellular elements, or barely discolored with the products of desquamation. If the bladder has been thoroughly washed, an ureteral catheter lying alongside of the cystoscope and draining the bladder represents the opposite kidney so that the two urines may be pretty accurately contrasted. This is an easy procedure in the female in whom by far the larger number of cases of pyelitis occur. Again, the purulent material may be so heavy and cheesy, it will scarcely drain through the catheter, a further instance of the need of a large tube. Repeated and careful injections finally break this up so it begins to drain away more readily. Just at this time, with the ureteral catheter *in situ*, an X-ray should be taken. It shows the position of the kidney, its size, the presence or absence of stone, and the course and position of the catheter, all of which may bear pretty significantly on the prognosis. We do not believe that a pyelogram is indicated at this time, and just right here we wish to emphasize flat-footedly and in no unmistakable terms that catheterization and irrigation of the kidney should be done only in the most chronic cases which have stubbornly resisted hypodermoclysis, proctoclysis and water drinking.

The treatment of pyelitis of children seems to be found overwhelmingly in females.—Goppert states 89 per cent. It is a pretty piece of scientific technique to catheterize the ureters in an infant or in a 4 to 6 year old girl with a miniature cystoscope and a 2 or 3 French ureteral catheter, and it is as unjustifiable and brutal as it is interesting. Rest in bed, liquid diet, colonic irrigations, and small doses of urinary antiseptics should be thoroughly tried out. The course is usually short, 7 to 10 days. Frequent urinalyses show the progress of the disease and a happy outcome can be confidently expected.

The treatment of pyelitis in adults follows the usual methods, but there is one very important feature in the treatment of all forms of pyelitis which we have intentionally reserved till this period in our discussion that it may be strongly emphasized, unhesitatingly recommended, and used in all types of the disease,

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namely "*changing the reaction of the urine.*" If the urine has been alkaline, immediately start making it acid; this may take several days. As soon as it becomes distinctly and strongly acid, commence rendering it alkaline; this again takes several days. During the time it is acid, give the urinary antiseptics and continue them up to the time that the urine shows a beginning alkalinity and then stop, giving no medicine of an antiseptic character while the urine is alkaline. This changing of the reaction of the urine may be kept up several weeks and is to be particularly recommended in the very long standing chronic cases. Apparently the bacteria do not like this abrupt conversion of their media and get mad at the changing of their normal habitat. It may be further that there is a very happy response of the mucosa to this treatment, characterized by a shedding off, which bears with the desquamation innumerable bacteria. It has been our good fortune, by this acid-alkaline treatment, to witness some brilliant results in long standing cases which had apparently resisted our usual methods.

The one remaining and distressing type of pyelitis to be considered is that of the tabetic. Porges and Necker, Nathan and Reinecke treat these cases only by 606 intravenously. Is it that this powerful drug possesses some selective affinity for the renal lining? Young, of Baltimore, has brought out in a monograph the use of mercurochrome for pyemic states, and it may be that the future shall decide that the treatment of all infectious processes shall be by antiseptics delivered into the blood stream. We have not used any hematogenous methods, nor have we had developed autogenous vaccines for the treatment of pyelitis.

In the discussion of the treatment of pyelitis we have intentionally avoided the consideration of pyelitis produced by (1) stone, (2) hydronephrosis and (3) stricture of the ureter. All of these are essentially surgical states demanding care of the actual mechanical pathology before we can hope to treat the pyelitis with any success. Each could be discussed at length, therefore we have only mentioned the subject to abandon it, as it is too comprehensive for consideration at this time.

In conclusion, we would tersely summarize the treatment of pyelitis by the one word, *water*,—water by mouth, by rectum and under the skin, using the cystoscope only in the chronic cases when the microscope and clinical findings show that there is not a satisfactory and progressive change for the better. For we believe that the indiscriminate use of the cystoscope probably produces more trauma and ill effects during the acute and sub-acute stages than good as a result of lavage of the renal pelvis. In all cases of pyelitis we earnestly recommend the change of the reaction of the urine as has been discussed above.

ULTRA-VIOLET LIGHT.

Its Place In Space and Therapeutics.*

By FRANK HANCOCK, M. D., Norfolk, Va.

I realize that in introducing this subject I am entering the sanctuary, violating the solemnities. The profession has always looked wistfully toward the old and accustomed. A certain regressiveness has characterized it, a homesickness, almost, for what has been.

We have the accumulations of a vast tradition of inert customs and conformities. They are going. One by one the superstitions fall. Manipulation, light, electrical means of treatment have hitherto been upon the index, but are now made respectable under the name of physiotherapy, and so I am able to present a new subject to an orthodox audience in an orthodox way; something I couldn't have done a few years ago: thus demonstrating that what was un-moral yesterday is worthy today, and maybe tomorrow forgotten.

Again and again researchers throughout the world have shown the value of U-V light in therapeutics, as are fresh air, sleep and recreation.

Ultra-Violet Ray in Space

It lies just beyond the violet of the visible spectrum. It is as invisible as the X-ray. To get at some definite standard for comparison, as in other fields, an arbitrary unit of measurement has been adopted. This unit is the measurement of the length of a light wave—visible and invisible—and has been named the Augstrom unit. This unit is one ten millionth of a millimeter in length, or one ten millionth of the thickness of a worn dime.

Science has no difficulty in measuring this, even small fractions of it. The Gamma rays of radium are the shortest rays known—from 2 to 7 hundredths of one Augstrom unit. Then come the harder X-rays, with a wave length of from 1 to 8 or 10 A. U.

Then we have a section of the invisible ray field, uncharted until we reach the beginning

*Read at a meeting of the Norfolk County Medical Society.

of the extreme ultra-violet field. Until quite recently this uncharted field extended to about 900 A. U., but Millikan has now pushed the limit to about 360 A. U. The extreme ultra-violet field extends then from the shortest U. V. yet measured (360 A. U.) down to a little beyond the limit of quartz transmission. Quartz transmits from 2,000 to 4,000,—after that comes the visible ray spectrum ranging from violet on the shorter wave length end to the red—the longest of the visible rays; and then the infra-red (invisible), and the heat rays, down to the Hertsian waves,—from a few c. m. to hundreds and thousands of meters in length along which travel the wireless and the radio messages.

The U-V generating apparatus has gone through about the same evolutionary stages as the X-ray. At first there was the interrupter type X-rac outfit with its very limited capacity, noise, gases, and uncertain interrupter;—and then the modern interrupter-less transformer and Coolidge tube appurtenances.

The first U-V light arc lamps were cumbersome and dangerous and gave small quantities of the actinic ray of the longer wave lengths. Tungsten was used a good deal at first, but it was too expensive, fragile and uncertain.

Then came the Cooper-Hewett mercury vapor tubes, but the glass absorbed all but the longest wave lengths. This was succeeded by the Quartz Mercury Arc, a great improvement upon all previous attempts to transmit U-V light to the human body. Glass could not be used even if it transmitted the shorter wave lengths as it would melt and fuse at the temperature reached in the quartz mercury arc. This latter, too, will be improved.

Two Types of Lamps

The diffuse lamp for general raying and the focussed lamp for intensified raying through water-cooled condensing lenses.

Bayliss, Clark, and others have definitely proven that the shorter wave lengths of U-V are more soluble in protoplasm, more bactericidal, and produce a leucocytosis. Clinical experience confirms these observations. The U-V ray proceeding from these lamps is greatly in excess of anything of the sort to be found in sun light. The amount there is very variable, depending upon moisture, dust, smoke, and other impurities. In English cities 50 per cent of sunlight is obscured by smoke; in Pittsburg 40 per cent. In five large American cities the soot fall is from 300 to 1,300 tons per square mile per year. Cities eventually will purify the air as they have water.

So quartz light can be given in larger doses than sunlight, and at any time. Bactericidal action of light is confined to the U-V region of the spectrum, beginning where the violet fades into the U-V, and continuing in intensity to the shortest wave lengths measured with the quartz spectrograph.

U-V irradiation may replace chemical antiseptics. Donnelly reports 40 cases of diphtheria carriers sterilized by direct application of these rays to the nose and throat. Fifty per cent were sterilized after one application. In the *American Journal of Clinical Medicine*, (January, 1924), Denman, Laryngologist of Chicago, points out the inadequacy of tonsillectomy in many cases of tonsillar infection, because the lingual branches of the lymphoid tissue retained pus and bacteria, and he had not known how to deal with these lingual branches with their intricate ramifications.

This was the problem;—the following is the solution:

Modern ingenuity having given us the mercury vapor lamp by which U-V rays are artificially generated in a vacuum quartz tube, nearly all such rays being of the short wave length,—these being of most value—they can be used in full therapeutic quantities; without the production of heat—the lens itself remaining cold throughout the exposure. Thus is brought to bear the strong bactericidal action of these focussed rays upon the throat, bringing about a cure, or an amelioration. This laryngologist often applies these rays following a tonsillectomy, with such gratifying results that he was induced to consider how he might further amplify this form of treatment in tonsillar and pharyngeal troubles.

U-V rays have physical limitations. They do not penetrate more than 3 or 4 m. m. Therefore they cannot of themselves sterilize the tonsil, its crypts and depths.

Wetherbee, of New York, demonstrated beyond a doubt that exposure to the X-ray caused absorption of the lymphoid tissue, faucial and lingual, and a shrinkage of the entire tonsil, verifying this in a series of experiments.

Denman considered a combination of the two for the disposal of the tonsil—sterilizing with the U-V ray, and shrinking with the X-ray. A few trials taught him that there was no antagonism between these two energies,

placed, as they are, side by side in space,—but rather that they were in symbiosis, were physiologically complementary. He uses the condensed water cooled lamp for sterilizing, and the Alpine lamp with its diffused rays to promote metabolic reaction against infection. The effects were dramatic in many cases. The X-ray destroys the embryonic lymphoblast root cells to which the prolonged growth of the lymphoid tissue is due. The follicles shrink, the crypts become shallow, their apertures widen, and eventually obliteration ensues with mere depressions left over the surface of the tonsil, now a fibrous nodule, devoid of lymph, clear of infection. Will we sometime throw away our dissectors and snares?

Theoretically the U-V ray is the method of choice in all bacterial diseases of the skin. In premature alopecia from seborrhoea it has a favorable influence. In a chronic sluggish ulceration caused by trauma, where epithelium refuses to grow, it stimulates, kills the infecting organism, cleanses by reabsorption, and induces rapid healing.

An illustration: A boy of 12 years of age had a traumatic dermatitis. Eight years before there had been an osteomyelitis, left leg, for which several operations were done through the years, the wound healing intermittently. There were finally seven months of uninterrupted health, when he sustained a bruise on the previously injured parts. A sore resulted over the old scar tissue; and then another, and another, until it seemed that all the scar tissue would become involved. X-ray showed the previously diseased bone to be healthy. His general health was good. Various treatments, antiseptics, supportives were tried without avail. Irradiation with the Kromayer lamp induced a marked change in a few days, and in four weeks all ulcers were healed.

An American soldier in Russia sustained a compound comminuted fracture of the right thigh, the sciatic nerve being severed at the same time. He was carried thirty miles in a sleigh, and then a Thomas splint applied. In the succeeding twenty-two months he was operated upon five times, severe infection having set in. Ten months of manipulation and massage followed. Then a trophic ulcer developed on the heel. It lasted fourteen months and healed temporarily. In November, 1920, it broke down again, covering a wide area over heel and posterior surfaces. In July, 1921, U-V and radio-vitant lamp treament was begun. Immediate signs of improvement were seen over this area, but then a general furunculosis set in,—arms, axilla, back, etc. Some of these were opened and rayed; others aborted when seen before suppuration. Under general raying the patient's body resistance was raised; the furunculosis disappeared; the large ulcer cleared sufficiently to apply skin grafts; and the soldier was discharged.

A girl of eighteen had a suppurating skin affection of the neck which had proved rebellious to all forms of treatment, including a long stay at a summer resort, with daily exposures to the sun's rays. Four treatments with the Kromayer lamp brought about a complete cure. Rosero, of Naples, reports favorable experience in twenty-two cases of chronic ulcerations, or torpid wounds. In the *Archives of Dermatology and Syphilology* five cases of erythema induratum are reported as having been successfully treated.

In the *American Review of Tuberculosis*, Mayer, of Saranac Lake, writes of the successful treatment of tubercular laryngitis. In a case of tubercular glands of the neck referred to me by Dr. Doughtie, eight to ten pressure applications of the Kromayer lamp resulted in complete healing. Recently I have treated two cases of chronic varicose leg ulcers, one of which had been very resistant to other forms of treatment. They responded readily to the condensed focussed rays of the Kromayer. Neither of them have recurred. Oliver of Boston reported twenty-five such cases permamentlly healed.

Dermatologists generally speak discouragingly of the treatment of acne with this ray. Early last summer I saw a man with an acne eruption over the back from neck to buttocks behind, and pubes in front. Some were papular, some pustular, some had healed—leaving the characteristic little depressed eschars. He was very uncomfortable and much run down. Besmeared with ointments from time to time without improvement, he had finally abandoned treatment. He was given a general irradiation twice weekly. A few pustules were opened. He immediately reacted. It was necessary to bring on a real erythema; some blistering followed. After eight treatments all evidence of acne had disappeared; the patient ate heartily, gained in weight, and has remained well since—these last six months.

Carbuncular affections respond quickly to this mode of treatment. Care must be exer-

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cised however, as diabetes is sometimes associated with carbuncles. U-V ray induces a superoxidation, which is a part of the metabolic fault in diabetes. Dr. Andrews will recall a case of his in which a large area of the lumbar region was involved; around the crater of this carbuncle was a corona of small abscesses, all stewing with pus. There was an immediate response to a general raying with the Alpine lamp. Several succeeding small abscesses were aborted with the Kromayer. It is true a vaccine was used to prevent a return, but only after this particular carbuncle was definitely subsiding.

So much for the bactericidal power of the U-V ray. The more important U-V rays, the shorter rays, in the far ultra-violet region that affects cells, toxins, bacteria ferments, are present in the mercury quartz vapor, but absent in the sunlight as it reaches us. It has been recently shown in the *International Medical Digest* that tumors of rapid growth contain large amounts of potassium, but very little calcium. Tumors of slow growth contain considerable calcium, but very little potassium. As calcium increases in the blood, the growth of tumors decreases. Cancerous cachexia presents a rapid elimination of calcium. The blood of cancer patients has less calcium than normal blood, resulting in an osteoporosis (porousness of the bone), and a deposition of mineral salts in the epithelium of the kidney. Calcium inhibits the virulence of cancer and its tendency to metastasis. It is therefore desirable, indeed necessary, to maintain a high calcium content in the blood in the treatment of malignant growths. This may be accomplished by the use of biologic or air cooled U-V rays. How calcium does this we do not know. May be through the parathyroid, which have to do with calcium metabolism—but that does not interfere with the clinical usage of the energy. Malignant tumors are accompanied by secondary anemia, due to cachexia and to a decrease of the cellular and chemical blood element. U-V light increases the cell and hemoglobin content of the blood in secondary anemia. This is not due to increase in iron metabolism, but to a general systematic stimulation, including a leucocytosis and a lymphocytosis. Hypertrophic rhinitis, hay fever, and asthma are characterized by a calcium deficiency. Investigations are proceeding with reference to the use of U-V with considerable promise of success.

U-V light influences general metabolism by changing the quantity of expired carbon dioxide, altering the rate and depth of respiration, and increasing the rate of growth in light as compared with the rate of growth in the dark. It accelerates all metabolic processes which, in cancer and cachexia of any origin, are suppressed by the toxic influence of the invasion. Its power to increase the calcium content of the blood has been shown again and again in the treatment of rickets, where the essential blood changes are a formidable decrease of calcium and inorganic phosphates. During the starvation period in Austria, 1919, this ray was repeatedly used; in fact it seemed more available than food until the American Relief arrived with car loads of cod liver oil.

Apes—orangs, I believe—were exposed to massive doses of X-ray by researchers for the deliberate purpose of producing a leucopenia. A number of these apes were then given injections of polio filtrates and tuberculous germs. They developed the respective diseases promptly. The rest of the apes were rayed with U-V light until a pronounced leucocytosis developed. The same injections were given. There was scarcely any response, and in some cases none at all.

U-V Ray in Space and Therapeutics

An induced lymphocytosis, then, increases animal immunity, a desirable result in any reparative process in chronic disease.

Concerning port wine discoloration, I desire to say that in one case treated recently, the results have been altogether satisfactory.

A young lady, otherwise unusually good looking, has had from birth this very marked coloring of the entire lower lip and chin. The treatment was tedious, but the discoloration has entirely disappeared.

Taylor Building.

ETIOLOGY AND TREATMENT OF SQUINT: RESULTS OF SOME OPERATIVE CASES.

By CHAS. A. YOUNG, M. D., Roanoke, Virginia.

My purpose in bringing this subject before you is to urge early treatment of squint, not only on account of disfigurement, but for the more important consideration of preserving vision in the squinting eye.

The vision in the squinting eye is lost in about 85 per cent of the cases from lack of use and can not be improved unless intelligently treated before the age of six years. Operation after the age of six years will in most cases straighten

the eyes, but will not improve the vision. Non-operative treatment before the age of six years will straighten the eyes in about 60 per cent of the cases and will preserve vision in both eyes in practically all the cases.

The usual causes of squint are:

1. Errors of refraction is probably the most frequent cause of squint, often termed—accommodative squint. Usually there is high hyperopia and astigmatism. This type often disappears temporarily under anesthesia and under influence of atropine.

2. Lack of Binocular Center, Binocular Faculty, or Binocular Desire is the second most frequent cause of squint. In this condition there seems to be no desire on the part of the brain to see an object with both eyes simultaneously.

3. Paralysis of one or more of the extra-ocular muscles, usually a birth palsy, is an infrequent cause of squint.

4. Poor vision in one or both eyes as the result of central choroiditis, tumors, albinism, etc.

5. Muscle anomalies: muscle either too short or too long, or attached too far forward or too far backward. This condition is very rare.

6. Bandaging eye for some length of time, especially before one year of age.

7. Specific fevers and convulsions while often given as the cause by parents only hasten the appearance of the squint.

Age of Development:

1. Congenital, or developed during first few months of life due to weakness or absence of one or more of the muscles.

2. Convergent squint, ordinarily between first and fourth years of life.

3. Divergent squint usually develops later in childhood and youth as in myopia.

4. Any time in life from a paralysis of one or more of the extra-ocular muscles, cataract in one or both eyes, loss of vision in one or both eyes and from muscular imbalance.

Treatment

Refraction under atropine and the prescribing of full correction.

Training vision in the poorer eye by bandaging or instilling atropine in the good eye, in which case the previously straight eye becomes the squinting eye; after vision is about equal in each eye we must maintain good vision in each eye by frequent examinations.

Training of fusion and binocular vision by the use of the amblyoscope and the stereoscope.

The above measures failing to cure the squint we are compelled to use operative procedures which give excellent cosmetic results.

Case Reports

Case No. 1. Miss M. L., age 12 years, has had convergent squint for past nine years. No improvement after glasses had been worn for past eight years. Examination showed 40 to 45 degress of convergent squint. O. D. squinting eye and O. S. fixing eye. Vision O. D.= 6/15. O. S.=6/5-4. Operation at Lewis-Gale Hospital, July 10, 1923. Ether anesthesia. Worth Advancement external rectus of O. S. Operation Lewis-Gale Hospital. Local anesthesia. July 28, 1923. Worth Advancement external rectus of O. D. August 30, 1923, eyes straight. No diplopia. Refractive error and vision before operaton:

O. D.+2.50 S.=6/15.
O. D.+2.00 S.=6/6.

Refractive error and vision nine months after operation:

O. D.+2.00 S.+25 cyl. ax. 15=6/9.
O. S.+3.00 S. =6/5.

Case No. 2. Miss R. P., age 13 years, has had convergent squint for past nine years. Wearing glasses for past eight years. No improvement of squint. Examination showed 22 degrees of convergent squint. O. D. Squinting eye. O. S. Fixing eye. Operation August 14, 1923, at Lewis-Gale Hospital, local anesthesia, Worth Advancement of external rectus muscle of right eye. August 30th eyes straight. No diplopia.

Refractive error and vision before operation:

O. D.+3.50 S.+50 ax. 180=6/9-2.
O. D.+3.75 S.+50 ax. 180=6/5-2.

Refractive error and vision after operation:

O. D.+3.50+75 ax. 180=6/7.5-1.
O. S.+4.25 Sphere =6/4-2.

Case No. 3. Miss K. H., age 13 years, has had a convergent squint for past twelve years. Examination showed 45 degrees of squint. O. D. is squinting eye. O. S. fixing eye. Operation at St. Charles Hospital, August 9, 1923; local anesthesia; Worth Advancement of external rectus of O. D. Operation at St. Charles Hospital, September 2, 1923; local anesthesia; Worth Advancement external rectus of O. S. November 3, 1923, eyes straight. No diplipia.

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Refractive error and vision before operation:

O. D.+1.50 S.=6/18.
O. S.+1.50 S.=6/9.

Refractive error and vision after operation: (3 months after):

O. D.+1.00+50 ax. 135=6/7.5.
O. S.+ 75+75 ax. 105=6/5.

Case No. 4. Miss V. M., age 26 years. Has had convergent squint for past twenty-three years. When four and one-half years of age both eyes here operated upon at Memorial Hospital in Richmond. As the hospital records were burned and Dr. John Davidson, who operated upon the patient, is dead, have not been able to find what type of operation was performed.

When first seen patient had convergent squint of 40 degrees. Both eyes turned in. Neither eye could be turned past mid-line in abduction. Both eyes showed horizontal nystagmus, and globe seemed smaller than normal, particularly cornea. O. S. is fixing eye. O. D. is the squinting eye. Vision without glasses O. D.=3/60. O. S.=3/60. Operation at Lewis-Gale Hospital August 25, 1923; local anesthesia; Worth Advancement of external rectus muscle of right eye. Operation at Lewis-Gale Hospital, September 12, 1923; local anesthesia; Worth Advancement of external rectus muscle of left eye.

At the present time eyes are straight. No diplopia and very little nystagmus.

Refractive error and vision before operation:

O. D.—2.50—2.00 ax. 90—6/30.
O. S.—2.00—2.25 ax. 80—6/30.

No change in refractive error and vision after operation.

Conclusions

1. Every case of squint should be seen by a specialist as soon as squint makes its appearance.
2. Glasses will straighten eyes in about 60 per cent of the cases.
3. Vision will be restored to the poorer eyes whether eyes straightened or not if seen early. Cannot as a rule improve vision after the age of six years.
4. Operation can be performed under local anesthesia in patients over twelve years of age and cosmetic results are excellent.

MacBain Building.

SINUSITIS FROM THE STANDPOINT OF THE GENERAL PRACTITIONER.*

By G. B. TRIBLE, M. D., F. A. C. S., Washington, D. C.

Prior to the anatomical studies of the Viennese school, notably Zuckerkandl, the posterior sinus group was a no-mans-land and the medical dictum was noli-me-tangere. Even the anterior and more accessible were but incompletely studied, and operative procedures were more or less limited to drainage of the antrum of Highmore through a tooth socket. Hajek, taking advantage of Zuckerkandl's work and with the wealth of clinical material at his disposal, attacked the problem from the surgical and curative standpoint, and developed a line of operative approach which in basic principles has withstood the test of time, and with not much modification has developed into the radical but anatomically simple intra-nasal surgery of Sluder, today. Further than that the intra-nasal route to the hypophysis was developed as a result of the comparative safety of sphenoid surgery.

The etiology of sinus infections is modified somewhat by the situation of the ostium; we have the frontal and ethmoids draining downward by gravity, the outlet at the dependent portion, though in the ethmoids, owing to the labyrinthine structure, gravity drainage is not constant. With the antrum and sphenoid the ostia are well above the most dependent portion, and retained secretions are the rule. The antrum is further exposed to a source of infection that does not affect the other sinuses, namely the teeth. Direct penetration of the floor by the roots of one or more teeth is not uncommon, but more often it is an apical abscess, or area of alveolar rarefaction and resorption that permits antrum infection. Drainage from the frontal or ethmoid may be directed into the antrum and we have the anomalous condition of an antrum full of pus, and no antrum disease. Nature endeavors to correct this state of affairs, and provides that the cilia of the epithelial lining keep up a current toward the ostium. The proportion between dental and other sources of antral infection is reported variously, the older investigations giving a higher ratio than the newer; roughly 25 per cent is probably a fair average. The teeth whose roots are in most intimate contact with the antral floor are the second premolar and the first molar. Trauma in extraction will

*Read before the Montgomery County Medical Society, Gaithersburg, Md., October, 1922.

open directly into the antrum, and is often aggravated by the bony condition; interstitial bone changes in the great group termed pyorrhea are very common. Infections of dental origin may not be confined to the antrum. Rapidly ascending infections are found, and in general show their dental origin by the foul odor of the discharges. The most frequent source of sinus infection is through the nose; systemic infections in some exanthemata and pyaemia may occur, but are not usual. The bone changes of syphilis with the obliterating endarteritis, the atrophic changes of atrophic rhinitis, and the surgical atrophy from too great removal of the vascular bodies of the nose, all tend to sinus infections. Repeated colds, of no matter what etiology, structural defects interfering with drainage and ventilation, and above all the recent pandemic of influenza and the accompanying widespread hemolytic streptococcus infection are the most frequent and important factors.

Macroscopic finding of pus is no longer considered a necessary thing without which there can be no sinusitis. We believe an abnormal mucosa, structural alterations in the bone, the presence of polypi or granulations, and above all the microscopic finding of tissue invasion by bacteria, constitute a true sinusitis and demand surgical intervention as much as the presence of free pus, which after all may be the expression of free drainage. Relief of mere stoppage of outlet and amelioration of symptoms from proper ventilation is demanded in the vacuum type of frontal involvement.

The questions of greatest import for the man practicing medicine as distinct from the rhinologist, the man who has to bear in mind all the possible complications and ramifications of the varied types of diseases, and symptoms, which may mean any disease or no disease, are: when should this or that patient be referred to a rhinologist; what means of study of the sinuses will he make use of that can not be provided by the general practitioner; why should a study of the sinuses be made; and what results are likely to accrue from this or that method of treatment or operation.

First, then, let us consider what are the chances of a sinus infection. We know the nose and the nasal accessory cells are more exposed to infection than any other portions of the respiratory tract, because from its prominent position the nose is exposed to all sorts of injuries with the resulting deformities and their interference with function. The infections from the mouth have been mentioned. The post-mortem findings give a good index to the percentage of involvement, though necessarily high because of terminal infections. Skillern quotes Gradenigo as giving positive autopsy findings of 22 per cent, regardless of cause of death in 203 examinations, Harke 34.5 per cent in 146, Oppikofer 47 per cent in 200 cases, while in death from influenza and pneumonia the percentage ran higher. In the great clinic of Chiari, where in pre-war days literally hundreds of all sorts of nose and throat conditions were treated daily, 2 per cent were reported sinus cases, using the old diagnostic technique of free pus, or pus on washings or aspiration, the presence of granulations or polypi, while the microscopic bone changes, hyperplastic ethmoid or sphenoiditis, or tissue invasion by bacteria were not considered. The condition then is widespread and necessarily the clinical manifestations in the living will be varied, depending a great deal upon the anatomical situation of the sinus, although not necessarily so.

The first great symptom of almost universal prevalence at some time or another in nearly every sinusitis is headache. Headache may or may not be definite in its location. Skillern has given certain areas as being relatively characteristic; over the brow indicative of acute maxillary or frontal suppuration; frontal headache from frontal sinusitis of a chronic type; vertex pain from the sphenoid and ethmoid; pain in the occiput from the sphenoid. In this regard, it is interesting to note that with the use of the suction apparatus, and the production of a negative nasal pressure, there is more often a complaint of occipital pain than any other; next is pain above and behind the eye. Since there occurs frequently more than one sinus involved, confusion will occur if localization by means of direct pain is attempted. Sinus headaches in general are distinguished from those of ocular origin, due to refractive errors by their independence of eye use, by their tendency to be worse in the morning and gradually wear off during the day. This characteristic depends upon the drainage being established, or the approaches to the ostia becoming more open by moving about, or assuming the erect position. Eye headaches are frequently frontal and clear up on eye rest, unless, of course, due to some inflammatory condition, such as iritis, irido-

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cyclitis, or glaucoma. Change of position, such as bending forward, aggravates a sinusitis. There is one symptom by which an ache over the eye, presumably from the eye, can be worked out, and that is by making pressure over the site of the insertion of the pulley of the superior oblique. This is known as Ewing's sign, and means an inflammation of the frontal sinus and is caused by an involvement of the periosteum at the attachment of the pulley. Absence of nasal symptoms in various types of sinusitis has led Hajek to believe that a large percentage of sinus cases go unrecognized, receiving treatment for neuralgias or headaches. Associated with the neuralgia pains rarely one finds a flushing and dilatation of the veins of the forehead on the side affected during the attacks. Ear symptoms such as tinnitus, persistence of tubal stoppage, suppurative processes of the middle ear and mastoid can be expected if it be considered for a moment how closely situated anatomically all these structures are. Pharyngitis lateralis, kept up by the presence of escaping secretions, inflammation of the pharyngeal bursa, persistent laryngitis with no attributable cause should all prompt an examination of the sinuses. Of general symptoms vague in outline is mental irritability, frequently indicative of an obscure infection.

Skillern gives as causes of headache common to sinus disease, the following: (a) Swelling of the mucosa with nerve pressure; (b) Direct contact of the swollen mucosa; (c) Negative pressure in the sinus; (d) Ulceration of the mucosa with nerve involvement; (e) Absorption of toxins; (f) Disturbance in the blood and lymph circulation at the base of the skull.

Sluder has expressed a rather novel conception of the situation, and explains both headaches and neuralgias as being evidences of peripheral nerve irritation. The oculo-motor, trochlear, abducens, and ophthalmic division of the fifth all pass through the sphenoidal fissure. This is a part of the sphenoid and may be closely associated with the nose, for in some cases cells extend into the greater wing. These nerves are readily seen to be more closely connected with the nose and para-nasal sinuses than the other cranial nerves. In addition, the optic, maxillary and vidian are directly in the sphenoid, a part of the nose. Further complication is caused by Meckel's (spheno-palatine) ganglion, situated in a fossa, practically a para-nasal cell, lying submucously or nearly so, exposed to all the influences befalling the nose and sinuses. By these relationships he explains not only the distinctly localized conditions, but also the neck and shoulder pains he has demonstrated so well to be of sinus origin.

Eye complications are so intimately connected with the nose that the line of demarcation between true eye conditions and those of nasal or para-nasal sinus origin has become very shadowy indeed. When it is considered that the eye with the optic nerve is surrounded on three sides by accessory sinuses, it is easy to see that no escape from involvement is possible, and the wonder is that this matter has so long escaped attention. This overlapping of the fields of rhinology and ophthalmology has its bearing and its import for the man in general medicine, who has possibly carefully and conscientiously gone over the history of the patient, sent him to this or that ophthalmologist, who in turn has made a careful examination from the eye standpoint, refracted him carefully, found but little, or nothing to speak of, on ophthalmoscopic examination. The patient returns to the general man, no better, and either the physician loses faith in specialism, or the patient loses faith in doctors, or both things occur. Rhinology is not a cure-all, but no examination of such a case can be complete without an examination of the nose and accessory sinuses.

It used to be good for a laugh in St. Louis when A. E. Ewing would send his doubtful eye cases to Sluder for thorough nasal examination, but that stopped several years ago, and the importance of the relationship is so well recognized that the combined examination is the accepted routine in many clinics and private offices. As before mentioned, the anatomical relationship of the orbit and its contents, from the ophthalmic fissure to the eyelids, renders it inevitable that a diseased sinus, even with only microscopic changes, will influence the eye, from any of several modes of transmission. The most simple form of transmission is by contiguity, and may be evidenced as an openly inflammatory reaction, from the extension of suppurative or necrotic processes, showing up in the orbit as a cellulitis or orbital abscess. Pressure on the optic nerve in its passage along the side of the sphenoid, or posterior ethmoid cells as a result of inflammatory exudate, disturbance of motility, displacements of the globe, can all result from infec-

tion of a neighboring sinus. Disturbance of the ophthalmic circulation with its attendant train of symptoms can easily be produced by involvement of the posterior cell group. The maxillary sinus from its position is less likely to be an offender, but a rarefying osteitis, or destruction of its roof, the floor of the orbit, with the accompanying ocular disarrangement does occur. Ocular muscle imbalance may be due to inflammatory changes in the periosteum or bone at the ocular muscular attachments, as well as from the absorption of toxins. Of greater import to the opthalmologist are the changes in the visual field, the retrobulbar invasion of the optic nerve in its passage for a good part of its length through the space next to the sphenoid and posterior ethmoid cells, and in some cases in these cells. This relationship has accounted for the terrifying accidents that have occurred from curetting these cells, when as you may remember, unilateral or in one case bilateral blindness promptly ensued.

The neuralgias are hard to separate from the headaches, as the presence of the highly organized and specialized nerves and ganglia are found in no other place in the body in so exposed a position. The ramifications of the branches from the sphenopalatine ganglion account for the neck and shoulder pain experienced and have been considered.

General symptoms other than the ones mentioned have not as yet been fully worked out. Mental irritability and unstability have been thought more or less characteristic, likely due to a neurosis from neglected symptoms. Drainage from the posterior group, which does not escape from the nose, but usually down the sides or back wall of the pharynx, contributes to the stomach specialist's findings of pus in the stomach contents, or may be coughed back and give rise to an unexplained source of pus in the sputum.

The diagnosis can be made by the simple head-light and nasal speculum if there is free pus, after nasal irrigation to clear away any nasal secretion proper, if it is a frank case with established drainage. Without finding such an open and shut arrangement it is a little different, and the aid of all the modern armamentarium of specialism must be called into play. It is particularly important to have a high-power lamp, giving a white light. Without this it is difficult to pick up small glistening beads of pus post-nasally, or to pick them up in the olfactory fissure.

An imported lamp of the arc-light type with heavy carbons is used by Sluder, but the microscope lamp put out by Spencer microscope people proves an acceptable substitute. With such a light the velvety, rather spongy mucous membrane of the hyperplastic type of cases can be recognized. The naso-pharyngoscope is of considerable value, particularly in children where lack of control renders postnasal mirror examinations very difficult.

Irrigation and puncture with irrigation are routine, but with the newer pathology, not so important as they were once considered. Transillumination in the case of the antrum has value, placing the illumination in the orbit as well as the usual method of placing it in the mouth. So far as the other sinuses are concerned its value is questionable. Good radiographs, properly taken, and properly interpreted give us complete knowledge of the sinuses. Criticisms made against X-ray examinations have been based on poor X-ray examinations. Seeing the wonderful plates of Van der Hoeve, of Leyden, where even the mastoid labyrinth was shown, and not only the sinuses, but the entrance of the optic nerve projected on the film, was a lesson in what can be done, if for no other reason than to get the anatomical relationship, to learn whether or not there are anomalies of structure, absence or lack of development of any cell. Schaefer, professor of anatomy at Jefferson, in his work on the para-nasal sinuses, from a developmental standpoint, has gone beyond the pioneers in this feld of the Viennese school. Clinically, it is impossible to tell if the trouble is arising from a frontal cell proper, or an orbital-ethmoidal cell, and the frontal of that side may be undeveloped. Any operative procedure not based on that knowledge would be unsuccessful, would be fraught with danger and could easily be fatal. The same applies to the sphenoid to a less degree.

Treatment in general is operative or non-operative, acute conditions non-operative unless alarming symptoms develop in the cells with gravity drainage. Cleansing the nose, steam inhalations, the keeping down congestion and blockage by weak cocaine and adrenalin, the menthol preparations, heat externally, position about 45 degrees from the perpendicular, free catharsis, the use of the coal tar products for alleviation of pain, are measures

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used alike by all. With the antrum, drainage by aspiration under the inferior turbinate, lavage of the sinus, introduction of antiseptics, removal of infective agent, if an alveolar abscess, must be done. Aspiration by negative pressure after shrinking the approaches to the natural drainage area often gives great relief. It is impossible to empty an antrum in this manner, and probably a sphenoid for, as before mentioned, the drainage through the natural opening is handicapped by being against gravity.

Evidence of undue severity, or the presence of complicating factors in an acute sinusitis of any type, call for operation, and that quickly. Meningitis and brain-abscess must be ever in the background; the avenues of extension are many and easy of access.

Operative procedure may be limited to removal of obstruction, to free drainage and ventilation, such as resection of the anterior end of the middle turbinate, which will tend to give freer drainage to both frontal and ethmoid and prevent deflection of pus into the antrum. Opening the maxillary antrum under the elevated or partially resected anterior end of the inferior turbinate, and by rasps making an opening for irrigation which will stay patent a few weeks, is often sufficient for the usual antrum, particularly if from dental infection, or due to breaking into the sinus in course of an extraction. In the latter case it will permit the mouth wound to heal, to be sutured or covered by a flap. Very extensive intra-nasal work can be done on the antrum, and will usually succeed unless there is polypoid degeneration of the mucosa. Then only radical exenteration will suffice, and must be done by a free exposure from the retracted upper lip. External operations are to be avoided if possible when the patient has vital teeth on that segment of the upper jaw. External opening, and particularly removal of the lining mucosa, will tear away the nerve supply which runs between the mucosa and the floor of the antrum.

Mere opening and establishing drainage externally in an acutely inflamed frontal will suffice. For the chronic case with persistent symptoms the Killian, preserving the bridge, is still the operation of choice, or one of its modifications such as Coakley's. Returning students from Germany have mentioned a recrudescence of the radical removal of all the outer wall of the frontal allowing a collapse of the tissue and an obliteration of the space. The deformity following this is not justifiable except to save life. Intra-nasal frontal operations, if carried beyond the simple opening of the naso-frontal duct are not likely to succeed; the very anatomy is against it. The presence of septa and irregularities on the floor, the extension of the sinus over the orbit, the finger like projections above, render it impossible to reach intra-nasally, and a dehiscence in the floor would give a fine opportunity for the penetration of the dura.

Sphenoid and Ethmoid Operations

Standardized and simplified by Sluder, working along the lines laid down by Hajek, a quarter century before. Coming always from above downward, never cutting from below upward. Very little curetting, cutting away with a forçep, limited in its scope. In his hands simple and with the rest of us safer than other types of operation. Using two knives, one with a two mm. blade and the other with a one mm. blade, taking first the longer one, inserting it beneath the middle turbinate at its anterior attachment, freeing with a cutting motion toward the septum, then turning the point downward cutting outward and down, freeing the anterior end third, then again cutting downward freeing another third, removing the remaining attachment with the snare. In this way, the entire side of the ethmoid is exposed, and the way to the sphenoid cleared. In this connection it may be mentioned that preserving the middle turbinate, if only the ethmoid is involved, and that anteriorly, may be done by bending the turbinate outward toward the septum, fracturing it at its attachment, then replacing it, although not much is gained by such a procedure.

The ethmoid is broken into by cutting from above downward with the two mm. knife, then removing the broken down fragments with the cup cutting forceps, which are made right and left. To open the sphenoid, the longer knife with a one mm. blade is passed back along the roof of the nose, and roughly the cribriform is at the level of the inner canthus, and with the back of the knife toward the upper surface there is no danger of getting into the cranial cavity. Coming to the face of the sphenoid, along the side of the septum, push directly through the anterior plate, cut down so far as can be gone, then starting at the top of the incision, cut out at an angle so that a triangu-

lar flap of the anterior wall is removed. This can be bitten away with Hajek or Feraci forceps. Hajek in his work attempted to find the ostium and with his hook tore away enough to permit the entrance of his biting forceps.

Drainage will have to be maintained and the nose kept free from crusts; dangers of the intra-nasal operation are hemorrhage and intra-cranial complications. Results are sometimes slow in being achieved and a tremendous amount of after treatment is often needed. Spectacular results are also obtained especially in the eye cases with optic nerve involvement if secondary atrophy has not taken place.

Sinusitis in children has been overlooked until recently. Fortunately, a large percentage of cases will clear up completely after the thorough removal of the affected tonsil and adenoid masses. The question of diet and nutrition in the development of sinus disease in children has been brought out recently and is a factor that is under the control of the general practitioner.

The difficulties of maintaining satisfactory relationships between the general practitioner and the specialist are not altogether the fault of either. When after a long study of the case it is referred to the specialist, it is only just and proper that he should keep the general practitioner informed of the progress, or advised of the necessity of some surgical procedure.

1026 *Sixteenth Street, Northwest.*

THE BLADDER, ITS IMPORTANCE IN GYNECOLOGICAL DIAGNOSIS AND TREATMENT.*

By GILBERT FRANKLIN DOUGLAS, M. D., Birmingham, Ala.

In the diagnosis and treatment of gynecological conditions, we are confronted with so many questions that may or may not be true until at times we overlook some of our most probable organs while searching for obscure troubles; I have reference to the urinary bladder. All of us are aware of the great importance of this organ and its welfare in the treatment of human beings. I will only refer to the female bladder as this paper is written from the gynecological viewpoint.

Let us consider for a moment the location and structure of this organ. It, as you know, is located in the pelvis, back of the symphysis pubes extraperitoneally. When empty it lies fairly well back of the pubic bones, but when full rises considerably above their upper margin. All things being equal, it is fairly well protected from injury both externally and internally. This is a muscular organ partially covered with peritoneum. It has three muscular coasts: (a) The fibers of external coat are of longitudinal type; (b) Middle layer is made up of circular fibers; and (c) Fibers of internal coat are of longitudinal direction, their fasciculi having a reticular arrangement. Mucous membrane lines its interior. The epithelial covering of the mucous membrane is of the transitional type. The three openings into the bladder are the urethra and the ureters. These have a mucous lining, this being a continuation from the bladder mucous membrane.

The bladder being a muscular organ which is fairly well protected, what are some of the factors that cause pathology?

In the first days of a baby's life this organ is thrown into activity. It serves as a reservoir for the urine after it has been secreted or excreted by the kidneys. We have the bacteria that are present in the urine conducted by the ureters to the bladder to be held until voiding takes place. This at times a source of extraneous or effete material, naturally causes irritation of the mucous membrane lining the bladder, lowering the resistance to such an extent that, when some more virulent type of bacteria comes in contact with the parts, a definite inflammation occurs.

In the female we have infections from the vagina or urethra which gain entrance to the bladder through the urethra which is only about four centimeters long. These may cause an acute inflammation, or may be of slower action and, before any special discomfort has been noticed, the condition becomes chronic in nature.

By reason of the bladder being in such close proximity to the uterus, tubes and ovaries in the female, in many instances we have an inflammatory condition as the result of inflammation of these organs and, as they are congested each month with normal menstruation, the opportunities for bladder involvement are many. Also, we have pus tubes and fibroid tumors of the uterus, either involving the bladder directly or encroaching on this organ to such an extent that its normal function is embarrassed and causes trouble later. We have as an enemy to the bladder the colon bacillus which can easily

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gain access to the bladder through the short urethra.

The female bladder is encroached upon during gestation by the enlarged uterus the pressure causing in many instances an inability to completely empty itself, which results in a retention of urine with bacteria. This aids in causing a cystitis.

In large fibroid tumors of the uterus, the bladder is drawn almost completely out of the pelvis, except its base. At the time of removal of the tumor, the bladder is subjected to injury. At delivery (childbirth) the bladder, unless emptied at frequent intervals, lies in front of the on-coming head of the foetus, and is liable to injuries by the pressing of the bladder wall against the symphysis pubis. In instrumental delivery the organ may be injured by a blade of the obstetrician's forceps and result in a vesico-vaginal fistula, etc.

Following delivery in which there is laceration of the perineum, with a cystocele developing, we have in many instances a residual urine in the bladder with its bacteria which eventually results in a cystitis.

The bladder is subject to tumors as are the other organs of the body. We may have carcinoma polypi, or we may have ulcers from syphilis, tuberculosis, trauma, etc., with subsequent infections. There may be stones present of quite long standing and large size, that have caused no symptoms until we have an infection from some other source.

So we see that the bladder is subject to most all of the pathological changes that are present in other muscular organs which have mucous linings; in fact it is much more liable than many of them, due to its position and being subject to changes in adjacent organs.

There are many other conditions of the bladder that arise which cause considerable trouble, but the above are merely mentioned to arouse our interest in the fact that the bladder is a very definite organ to be considered from the standpoint of diagnosis and treatment in gynecology.

Having seen some of the conditions that we have, I now ask your attention while we take a few of the very definite pathological conditions of the bladder that are often overlooked in making our diagnoses.

A patient comes into the office complaining of pain in her lower abdomen. We at once confirm her assumption that she has some pelvic trouble and will immediately begin with our history, trying to establish or gain facts that will cause a conclusion that she has trouble with her vermiform appendix, either one or both of the fallopian tubes or her uterus. After having obtained our history we have the patient put on the table for examination, at which time the cervix is checked for erosion, eversion, carcinoma and old laceration or infection. Then a bimanual examination is done and, if no masses are found but patient shows tenderness in region of the tubes, the diagnosis of acute salpingitis or a parametritis is made. Patient is given douches, etc., trusting that this may correct the condition.

Now, I feel that the above-mentioned procedures are good as far as they go, but when we have a patient almost moribund, or nervous from a slight degree to that of being hysterical, who has or has not been the rounds to most "every physician in town," and who complains of pain in her lower abdomen, which improves for a short time to return even worse within a few weeks, symptoms worse when on her feet or after eating rich, spicy or acid fruits or food, and after sexual intercourse (if a married woman), I feel that certainly a patient of this type is entitled to every consideration and means or methods of diagnosis that we have, to ascertain her real trouble before "dubbing" her a neurasthenic or as being hysterical. Many of this type are suffering with some type of bladder disturbance. It may be either an acute or chronic cystitis, the latter the more probable, if it has been going for some weeks or months. Or some of them may have a stone in the bladder, a malignant tumor, or some other trouble. For us to overlook a bladder condition with frequent desire for urination, the urine at times being bloody, will not only allow our patients to continue suffering but will be the diagnostic pivot that will turn them away from a recovery.

My experience is that there are very few things that are more annoying to the patient or more liable to cause a profound nervousness than to have a severe cystitis to last over a period of several weeks or months, during which time the patient is unable to eat properly or to sleep on account of having to get up so many times during the night to void, and because of the pain which is present. Many of these patients will lose weight and become despondent, feeling that nothing will relieve them.

Now, just a word as to diagnosis. Most of these cases are easily diagnosed if we will make an unbiased examination, keeping in mind the bladder as one of the organs that can cause trouble, and if we will make a microscopical examination of the urine to determine the presence of pus cells, blood cells, epithelial cells, etc. Many of these patients come to us complaining of "kidney trouble," bring a specimen of urine, and request us to examine their "kidneys." This is done to satisfy the patient, only testing specific gravity and for albumin and sugar. If this is negative, we tell the patient of our finding without making a microscopical examination of the urine, which would be the means of detecting pus, blood, epithelia, etc., which would probably clinch our diagnosis as to a cystitis or other bladder trouble. Just here I cannot refrain from saying that I do not feel it fair to our patients or to ourselves to give them a diagnosis without making an examination.

If we are unable to arrive at a diagnosis by the ordinary means of examination—bimanual use of speculum, rectal, microscopical, etc.—we should cystoscope the patient if the pain is located in region of the bladder. By so doing, we can often clear the diagnosis which is better than to operate on a patient to find that she had a medical or non-operative condition. Those of us who do surgery often seek the more spectacular side—that is, operate rather than take more time to work out a proper diagnosis. In this way we often harm rather than help patients. Some of these cases have for years been taking Lydia Pinkham or other of the patent medicines or "cure alls" for "female trouble," as they dub it, so for us to fail on a diagnosis not only makes it embarrassing but encourages our patients to seek the chiropractors, quacks, or charlatans in the effort to find relief.

It is not the purpose of this paper to dwell on treatment or presume to give any special methods of treatment, but I feel that we should give time and special attention to get results in these cases. I will mention briefly cystitis. If we allow a patient to continue long hours of work, small amount of sleep, attending to many social functions with the eating of highly spiced foods, automobile riding, etc., and merely give urotropin or other urinary sedatives or antiseptics, we will, after a period of four to six weeks, find the patient in as bad condition as when she started treatment. To secure results in these cases, we should put patients on a rational method of treatment—rest in bed, small amount of exercise, with *no* automobile riding that would cause trauma to the bladder, bland diet, bladder irrigations with a mild antiseptic solution at intervals of at least every other day, as well as urinary antiseptic or sedative. I have mentioned cystitis as it is one of the most common bladder conditions met, but there are others that require the same diagnostic precision that would be used in reference to other organs.

In closing, let me insist that we do not "dub" as neurasthenics or neurotics gynecological patients who complain of pain in the lower abdomen, with frequent, painful urination, or who have a heavy "bearing down" feeling in the region of the vagina, because we are unable to outline an enlarged tube or other trouble with uterus or the tubes. Until we have made a careful microscopical examination of the urine and have examined the bladder bi-manually or have done a cystoscopic examination to rule out any trouble with the bladder itself, we may allow many gynecological patients to go improperly diagnosed, and we will fail in treatment as a result of a mistaken diagnosis.

Conclusions.

1. The bladder is one of the essential organs to be considered in making gynecological diagnoses.

2. The structure of the bladder is muscular, having three layers, partly covered by peritoneum, and it is lined with mucous membrane which is covered with transitional epithelium. It is located in the pelvis. It is a reservoir for the urine.

3. Bacteria gain entrance to the bladder through the ureters above, and through the short urethra from below.

4. The bladder being in close proximity to the uterus, tubes, etc., it is subjected to infection from these organs and to injury from trauma at childbirth or operations, hysterectomy, etc.

5. Cystitis may develop from residual urine with infection in bladder due to cystocele, etc.

6. The bladder is liable to tuberculosis, cancer, polypi or other tumors.

7. Many cases of cystitis or other bladder conditions are diagnosed as salpingitis, para-

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metritis, or some uterine disturbance as a result of incomplete examination.

8. Many patients who are "dubbed" as neurasthenics or neurotics have as a pathological basis a cystitis or some other bladder disturbance.

9. In making our gynecological diagnoses the bladder should be dealt with as a separate organ with a definite pathological entity.

10. Before giving either a negative or positive gynecological diagnosis, take time for a proper examination, bi-manual, speculum, rectal, microscopical and cystoscopic, if necessary, where symptoms are in the region of the bladder.

11. Improper diagnosis is often the cause of patients seeking relief of the patent medicine "fiends," chiropractors, quacks or charlatans.

12. In the treatment of bladder conditions in women, keep in mind that results are often slow. The patient should be advised of this in the beginning so as to hold her confidence long enough to effect a cure. Advise her that only the most hearty co-operation will make her recovery possible.

13. Before declaring any woman a profound neurotic or neurasthenic, eliminate bladder pathology.

815-17 *Empire Building.*

X-RAYS AND THEIR THERAPEUTIC APPLICATION.*

By JOSEPH SHOHAN, M. D., Greensboro, N. C.

When the now immortal Wurtzburg Professor startled the scientific world with his epochal discovery of penetrating rays, he was somewhat at a loss as to how to designate them. In his preliminary communication to the local Physico-Medical Association at Wurtzburg, on December, 1895, we find the following footnote, "For the sake of brevity I will make use of the word rays, and in order to differentiate them from other rays, I will call them X-rays." Throughout the rest of this communication, and its continuation in March of the following year, and in his subsequent researches in this field, Roentgen continues to call this newly discovered agent, "X-Strahlen," X-rays. Not because, as is popularly believed, the discoverer was ignorant of the nature of his discovery, but rather because at that moment he could not, as he says, very well find a more appropriate designation, and for the sake of brevity, he designated them as he did. As a matter of fact, when one reads carefully the original communications of Roentgen, one is rather impressed with the depth and thoroughness of his work and how well he grasped the full meaning of his new discovery. Where he fell short of experimental proof, his wonderful scientific intuition led him aright.

At the end of his preliminary report, after a detailed description of his experiments and the resultant discovery, he put the question to himself, "What then, are these X-rays?" And he answered, "At first thought, one is perhaps inclined to think of Ultra-Violet rays;" but he very correctly declined to accept that view, and proceeded to look for another explanation. His other explanation was, that there is "A sort of relation between the new rays and light rays." In that short sentence Roentgen not only gave us the key to his great discovery, but practically left the door wide open for others to come and work out all the details; and they came and proved Roentgen right.

Whatever justification there was twenty-eight years ago for the "X," which stood for the unknown, today, with our improved knowledge of the physical and the biological action of these rays, there is no room for the "X."

When the physicist of today puts the question to himself, even as Roentgen did twenty-eight years ago, and asks, "What are these rays?" he does not hesitate the least bit, as Roentgen did then, but answers fully and understandingly, "These rays are nothing but light rays of a certain kind, and all the known facts and all the known laws, pertaining to light rays pertain also to these new rays." We know that what we perceive as light is the reaction of waves of the universal ether on the retina. Where there is a diseased or a non-functioning retina, light ceases to be, but not the ether waves. They go on forever. It is within the daily experience of everyone, even of children, that there are various colors of light, such as red, blue, violet; or we may say light varies in quality. Optical physics tells us that this difference in quality or color is due to a difference in the length of the ether wave. Our retina is so constructed as to respond to the stimulus of waves of certain lengths, but only a few in number. We can not perceive with our retina the extremely long waves, such as the wireless, nor the extremely short waves, such as those that emanate from radium, or from the X-ray tube.

*Read before the Guilford County Medical Society, January, 1924.

X-rays may be said, then, to be non-optical light rays. When we speak of light rays, we consider them from the point of view of quantity as well as quality. The quantity which is intensity, whether bright or dim, depends upon the quantity of light that falls on a given point in a given unit of time. The quality, which is color, depends upon the length of the ether wave. It is even so with the so-called X-rays. We may speak of them qualitatively as well as quantitatively. The quality of X-rays is not a matter of color, since it is not interpreted by the retina, not being optical. Their quality is their penetrating power, or penetration. Some rays can penetrate only 1/32 of an inch of a given substance, some penetrate ½ inch, 1 inch, etc. The quality of the X-rays, as the quality of the light rays, is dependent upon the length of the waves. A given wave length will always be of a certain quality, no matter where and how it is produced. Not in the sense of color, however, for they are non-optical, but in the sense of penetration. The quantity or intensity of the X-rays is the amount that falls on a given point in a given unit of time, under given electrical conditions, but quantity is not interpreted as brightness or dimness, since they are not optical.

What I have said so far, of the physics of light rays, and X-rays is by no means the Alpha and Omega of either or both. This is neither the time nor the place for a thorough discussion of the physics of X-rays. However, the few preliminary remarks I have made so far will help us, I hope, to a more thorough understanding of the problem of Roentgentherapy, and a full appreciation of its difficulties. It is essential that we hold fast to those two conceptions of X-rays, the conception of quality, which is penetration, and the underlying physical cause of it, that is, variation of wave length, and to clearly and distinctly hold this apart from the idea of quantity.

No sooner was the news from Wurtzburg broadcasted, as the radio man says, than the medical world realized that a powerful new weapon was added to its diagnostic armamentarium, a diagnostic aid surpassing in its range of usefulness the thermometer, the stethoscope, and, for practical purposes, the microscope. Few, however, if any, realized at the time the therapeutic potentialities of this newly discovered agent. But it was not long before the medical world was face to face with incontrovertible evidence that these mysterious rays not only had the power to penetrate any part of the human body and leave a silhouette of it on the photographic plate, but that they also had a definite reaction upon the tissues exposed to them.

It so happened that the entire instrumentarium for producing the X-ray negatives was, in those early days, very crude. As a consequence, long exposures were necessary. You her now-a-days of roentgenologists making negatives in a second, or a fraction of a second. It is hardly ever necessary today to expose any part of the human body longer than fifteen seconds. In those early days, however, it was necessary to make long exposures, one minute, two, three and longer. As a result of those long exposures it was found on numerous occasions that the parts exposed showed slight superficial burns, or that the hair on the exposed parts fell out some days after the exposure. It became evident that, besides the chemical action on the photographic plate, the X-rays also have some kind of biological action. What may this biological action be? And how, and by what means, do these rays act on the living cells and tissues? To that question we have truly not yet found the final answer, though a great deal of light has been shed on this baffling mystery.

Fortunately for the ailing human race, we physicians are empiricists, from our very inception so to say. We never wait til the physicists or the chemists or the biologists tell us the last word about any remedy we wish to make use of. If we did, ailing humanity would never have known the inestimable benefits of quinine, mercury, digitalis and the entire gamut of the pharmacopeia from A to Z. It is well for us, and well for our patients, that the medical man trusts to his sixth sense and empiricism. True, somebody pays the piper sometimes in one form or another. But in the case of roentgenotherapy, it was the roentgenologist himself who paid, in some cases, the supreme price.

While the whole civilized world knows and honors the name of Wilhelm Roentgen, and deservedly so, few, if any, know the name of Leopold Freund, the father of roentgenotherapy. I will give you here practically Freund's own words of the humble beginning of one of the most promising therapeutic measures at the disposal of the medical profession. It was in 1896, less than a year after Roentgen's dis-

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covery, that Leopold Freund decided to experiment and remove hair from a large naevus pigmentosus in a little girl. He was prompted to this experiment by a newspaper article he read in June, 1896, in which it was reported that a man working with X-rays became afflicted with a dermatitis accompanied by extensive loss of hair from the head; he was further prompted by another article appearing soon afterwards in the *Deutsche Med. Wochenschr.* from the pen of a Berlin doctor, who noticed the same effects after a fortnight's radiation on the head of a young man. Prompted by the two incidents Leopold Freund procedded to lay the foundation of modern roentgenotherapy, which, by the way, he is still practicing. Just to give you an idea of what roentgenotherapy meant 27 years ago, I will quote one sentence from his description of this historic experiment. In describing the X-ray tubes with which he was working, he says, "The tubes were capable of giving a roentgen photograph of a man's hand at a distance of 15 c.m., that is 6 inches, in one minute's exposure." After many days of exposure, two hours daily, Freund was rewarded by producing the desired alopecia, and, as was to be expected, some very undesirable skin reaction. In spite of that, however, Freund continued undaunted. Shortly afterwards, a host of investigators and experimenters, the world over, took up his cue. Only 8 short years later, July, 1904, Dr. Brocq, of Paris, in a preface to Belot's "Radiotherapy" says, "Radiotherapy was born but yesterday; today it may be said to dominate the therapeutics of dermatology." In a recent paper by Mackee and Andrews on "The Valoe of Roentgenotherapy in Dermatology," they enumerate a list of 81 skin diseases, in the treatment of which they make use of X-rays. They state that "Roentgen Rays constitute the most useful and successful single remedy we possess for the treatment of dermatologic diseases. The only competitor for this distinguished position is radium." Hazen, in his paper on the subject, sums up the value of roentgenotherapy by saying, "Roentgen Rays are probably the most useful therapeutic agent that the dermatologists possess today." So much for skin therapy.

It was in the very nature of things that, in administering X-rays in dermatological conditions, more or less marked reaction of the rays on deeper seated tissues was soon observed, as well as the marked and striking reaction it had on the blood. The therapeutic action of X-rays was soon claimed for many and varied conditions. As early as 1903 the late Professor Nicholas Senn, Chicago, called attention to the favorable effect of X-ray exposures on the spleen in cases of leukemia. Shortly after, Halber and Linser, and a host of others after them, showed experimentally, the effect of the rays on the white corpuscles in the blood, especially the lymphocytes. In the same year, my former chief, Professor Albers-Schoenberg, made experimentt on rabbits and guinea-pigs, producing sterility with the rays. Later, in 1905, the Americans, Brown and Osgood, reported findings of 18 cases of azoospermia in men who had been engaged in X-ray work for 3 years previously. Soon after this the effects of the rays on cancerous tissues were investigated and proven experimentally. This added knowledge brought new vistas to the fields of roentgenotherapy. It opened new avenues, new possibilities; but each bit of knowledge, each conquered bit of ground, was both a promise and a warning.

If X-rays are helpful in cases of leukemia, because of their action on the white blood corpuscles, what about those numerous cases in which we do not desire to affect these corpuscles? How are we to guard against these untoward effects? If X-rays can so affect certain organs, such as ovaries, as to make them functionless, how are we to produce that effect and no other, and prevent or escape the many undesirable effects that are being reported from everywhere?

Nothwithstanding the numerous obstacles and the complexity of the problem, roentgenotherapy devoloped by leaps and bounds due, mainly, to the idealism and spirit of self-sacrifice of the medical man, and the untiring efforts of the physicist.

Next to the dermatologist it was the gynecologist who was quick to see in this new agent his best ally. Already in the year 1912, only 16 years after Freund's experiment with that naevus of the little Viennese, Gauss and Lambke, of Frieberg, were able to report no less than 205 cases of various gynecological disorders treated and cured by their improved method. Those cases were either metropathies or myomata. Similar results were reported from every important clinic in Europe, as well as America. The results of some were better than others. Some were even disappointing, but this did not halt the onward march of

roentgenotherapy. It soon became apparent that even the dismal and hopeless prognosis of the cancer victim might have to be changed. In fact the final cure and eradication of malignant growths has become the goal of roentgenotherapy.

However, in looking over the literature of roentgenotherapy in its various ramifications, whether in dermatology, internal disorders, or gynecological conditions, one can not very well escape the impression that there is a great lack of unanimity and uniformity in the results reported. One observer will laud the X-ray as the remedy par excellence for a certain condition. Another observer, equally trustworthy, is equally vehement in his denunciation of this very same remedy. To be sure, we know as practicing physicians that hardly ever has any remedial agent produced uniform results, good or bad, in the hands of all observers. But with the remedy under discussion, it has been particularly aggravating, and for a very good and sufficient reason, namely, dosage.

You who are called upon to prescribe various remedies for various conditions, day in and day out, are in the best position to appreciate the paramount importance of accurate dosage of every medicament you are to administer. You know that it is not only important to gauge accurately the amount of a given remedy your patient is to take, but you will readily admit that fully as important is it to know, whenever possible, the quality, the strength, of the medicine prescribed. The therapy of digitalis, for instance, has been improved greatly since we learned to standardize our tinctures and know, not guess, the quality of the dose the patient takes.

Imagine for a moment, if in prescribing digitalis we could only have some crudely prepared tincture, and would not know how much to order, but simply tell our patients to take a mouthful or two now and then: no doubt that was the very method our predecessors used, the so-called herb doctors, and their results were what? Not always disastrous, in fact: sometimes good, sometimes bad, sometimes indifferent.

Again imagine modern vaccinotherapy, conducted without knowledge of how to count the number of bacteria in a given quantity, just making a haphazard suspension of some growth, then take a syringe and inject some of it. How much? A syringe full? Oh, no not a full syringe, but just enough, and inject into your patient. How often? As often as he will stand for it.

You heard me tell you today, how Leopold Freund standardized and described the quality of the rays he administered to that first historic patient. He used the X-ray tube that could take a picture of a human hand in one minute. That was all he knew of the quality of the remedy he administered. How much of it did he give? He tells us, two hours a day. If you ask me why two hours and no more or no less, I could not answer to save my life, and I am sure brave old Freund could not, unless it be that his crude little generator could not stand the strain any longer.

From the early-day methods of Freund to the present day roentgenotherapy is a far cry. The vast amount of research work of the physicist and the biologist have all but solved the most important problem of roentgenotherapy, the problem of dosage. The physicist has analyzed the entire spectrum of the rays, investigated and measured the length of every wave. For when an X-ray tube is in operation the rays emitted are not homogeneous, not all of the same wave length, but of various lengths, hence various penetrations. Thanks to the unremitting work of the physicist we know how to exclude the undesirable rays, and we utilize only what we consider best for our purpose, by means of suitable filters. Our present day instrumentarium is so superior to those of the pioneer days, that one is almost inclined to consider them as the last word in X-ray instruments, though, of course, this is by no means so. We are able to produce rays of practically any desired quality, or penetration. We can administer any quantity of it, operate the machine and the tube for as long as we care to, without interruption. By means of various devices we can practically be assured of the constancy of the quality, and the exactness of the quantity.

The experimental biologists have all but solved for us the important problem of the physiological effects of the rays on living tissue. It is obvious that unless we know how the rays affect the living cell, accurate dosing is out of question.

At one time the belief was current amongst roentgenotherapeutists that X-rays have a selective action on living tissue, that they affect certain cells and shun others. We know today, that this is not so. X-rays affect all liv-

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ing tissues. If one may speak of selectiveness, it is only in a cellular sense. The various cells differ in sensitiveness, some are more and some less sensitive, but no cell can withstand for long the withering action of the rays, if a sufficient quantity be administered. I say quantity advisedly. The reaction of the cell to the rays is primarily in proportion to the quantity of the rays it absorbs, and only secondarily to the quality, or length of the wave. I have an idea that the popular notion amongst physicians is quite the contrary, that they believe it is the quality that determines the reaction and decides the fate of the attacked cell. It is well to bear in mind that this is not so. The biologic reaction is in proportion to the amount of rays absorbed; those absorbed, and not those that go through and pass on deeper.

What happens to the individual living cell when exposed to the scathing action of this non-optical light, so to say? Some investigators are of the opinion that the rays strike at the vital function of the cell, its reproducing function, and thus blight its young life. The evidence of other investigators points to the damage being done to the cell wall which eventually produces cytolysis. This may explain the well-known fact that young cells, and those in process of division, are more vulnerable, because their wall-membrane is not yet fully organized, and they are thus more readily affected by the ionization that results from the absorbed rays.

The range of sensitiveness of various tissues is considerable. At one end we have lymph-tissue which is three times as sensitive as skin. At the other end of the scale we have that highly differentiated, stable, muscle tissue which is only half as sensitive as the skin.

As a rule the more stable and more differentiated a tissue is, the less sensitive it is to the action of the rays. The less stable it is and the more it approaches the embryonic state, the more sensitive it is. This is known as the law of Bergonie and Tribondeau.

The anatomic location of any given cell exerts no influence whatever on the resultant effect of radiation. It depends solely on the histologic structure of the cell and whether it is, at the time of radiation, actively mitotic or not. Lymphoid tissue, for instance, has its own sensibility coefficient, as we speak of it in roentgenotherapy, and that co-officient remains the same, whether the tissue happens to be in the thymus, cervical lymph nodes, tonsillar tissue or as sex cells.

Were Mother Nature indulgent to us, causing all our malignant growths, like our beauty, to be only skin deep, then in the light of our present knowledge of X-rays, the problem of dosage would have been comparatively simple. But for reasons best known to her, Nature ordered it differently. Most of the malignant growths with which the human race is afflicted are located at some depth in our body. To reach those growths with our X-rays, we have to force them through the skin and various underlying organs. It may be the bladder, the intestines, the lungs, the very sensitive suprarenal or what not. Furthermore in exposing any given growth to radiation, the various tissues in which it is imbedded and by which it is surrounded are practically always exposed along with it. Practically, it is seldom possible, and theoretically it is not desirable to limit the radiation to a field, just small enough, the size of the tumor. Without going into any detailed discussion, I will merely mention that in the light of our present knowledge, comparatively large fields of exposure have the advantage over small ones. We are thus irradiating not merely a small, or if you please, a large tumor, but we are actually irradiating a goodly portion of the entire body. We know that the final result of the rays on the individual cell is its necrosis, whether it is by way of its membrane or through the action of its chromosomes. This entire volume of necrosed cells, the guilty as well as the innocent, have no other means of exit from the body but through the blood and lymph circulation. But the blood is already strewn, so-to-say, with the slaughter of its own innocents. The blood, too, we must bear in mind, was bombarded; it was right in the very path of the rays when the tumor was irradiated. The lymphocytes of the blood, we know, are particularly sensitive under the fire of X-rays; and, in speaking of the blood, we must not lose sight of the fact that while a limited portion of the body, ever so small, is being irradiated, the entire volume of the body-blood is irradiated along with it. The blood keeps on circulating through our limited area, and, after a given time, the entire blood has been under fire. And it is very often a body already sick, cachetic, with one foot in the grave, that is called upon to take care of and dispose of at short notice the cy-

tolitic remains of all kinds of cells. No sinecure.

These practical considerations are today agitating the best minds amongst roentgenologists the world over, and to a certain extent are the causes for the lack of unanimity in the results reported by various investigators of which I spoke above. But we are slowly emerging from this discord; the mist is being dissipated by our better understanding of the cancer problem as a whole.

It must be quite obvious to all of us that, though the knowledge of any therapeutic agent be ever so thorough, its successful application in medicine will depend in a measure upon our knowledge of the condition in which we wish to apply that agent. Hence, the question quite naturally forces itself to the fore, "What is Cancer?" Is cancer merely a local dyscrasia, with secondary systemic disturbances, anemia, cachexia, etc., or is cancer primarily a systemic morbid condition with local manifestations of new growth?

Surgical therapy in its very nature assumed, with no good evidence to the contrary, that cancer was a local disease. Remove the cancer and you cure, or at least may cure, your patient. Hence, the goal and ideal of surgery had been, as perforce it had to be, the radical extirpation of the invading tumor; remove it, stem, branch and root. In cancer of the breast, remove breast, pectoral muscles, fascia, glands,—anything within sight or out of sight. In cancer of cervix uteri, hysterectomy, then panhysterectomy, the Wertheim operation as the last word. Who will gainsay that modern surgeons by their courage and their skill, by their ingenuity and their dexterity, have far surpassed all our expectations? It is nevertheless a sad, sad fact, that the results of surgery in malignant growths have, to say the least, not been commensurate with the efforts and devotion of our indefatigable surgeons.

When the roentgenologist ventured into the field of cancer therapy, he quite naturally followed in the footsteps of the surgeon. He, too, aimed at the destruction of the invading parasite. He bent all his efforts toward the accomplishment of this surgical aim, and beat the surgeon at his own game, by doing it without surgery. It is rather a bit too soon to talk of results. All one can say so far is that they have not been much worse, if any, than the results of surgery. But while the roentgenologist was busily engaged in improving his instrumentarium to produce waves of shorter and still shorter length in order to pentrate and destroy the deep-lying cancer, and go the surgeon with his scalpel one better, evidence is accumulating that such a feat is seldom if ever possible in the practical application of the X-rays, and what is better, that it is not really necessary.

No less an authority than Opitz of Freiberg stated recently, "that while it is possible to kill cancer cells by roent-ways the dose required would be several times as large as the dose actually employed, the action of the rays does not consist in a direct destruction of the cancer cells. They cause the formation of chemical substances which may influence the cancer even if the rays are not applied directly to it. The hope of applying a dose of roentgen rays great enough to destroy cancer is utopian."

As a matter of fact, it has been the experience of many observers that cancerous tissues may react to irradiation of distant parts of the body. I have lived to see one or two cases of distant metastases disappear, after irradiation of the main tumor some distance away. As a matter of fact, evidence is slowly but surely accumulating that would tend to show that cancer is not primarily a locan phenamenon, but is a systemic dyscrasia with secondary local manifestations. If that be so, then the complete eradication of this secondary phenomenon, whether by the surgeon or by X-ray, is not a sine qua non to a cure for this dyscrasia, and when eradication is performed, a cure need not necessarily follow, and as a matter of fact, does not in the vast majority of cases.

Surgery no doubt offers the best method for fairly complete destruction or removal of the parasitic growth, but no more; X-rays on the other hand, will in vain try to compete with surgery as a means for the destruction of the tumor. However, it offers what surgery can never do, a possible systemic cure or counteraction to a systemic disturbance. If that be so, then the effect of the rays on the blood and surrounding tissues is not only not to be avoided as injurious, but actually desirable for its beneficial systemic action.

Professor Loeb says that there are intrinsic sources of radioactivity within the human body. Bachem, in his recent work, says, "the atmosphere we breathe contains radium emanation. Nearly all springs contain radium

emanation;" and he goes on to say, "that while primitive man was always in contact with radioactive materials by living in caves, sleeping on the ground, drinking from springs, etc., these things are entirely lacking in the household of civilized man. The human system to be well balanced must have a certain amount of radioactive factors; deprived of those through our super-civilization, we must needs suffer for the lack of them." How, in which way, is this disturbance expressed or manifested? Very likely in many ways; and may not one of them be that dyscrasia which manifest itself through parasitic growths which we call cancer?

In fact Bachem, too, says as much. To quote him again, "From this viewpoint, the administering of radium in small doses is a very natural cure. It re-establishes conditions, which are excluded by our modern civilization."

If our civilization has deprived us of our due share of radioactive substances, with the consequent diseases due to such deprivation, may it not be that this very same civilization has at last produced the X-ray tube to supply us artificially with the necessary radioactive factors to help us counteract those systemic disturbances?

I detained you perhaps too long with a discussion of cancer therapy, not that it forms in any sense the chief activity of the roentgenologist, but because the cancer problem per se, is today uppermost in our minds on account of its appallingly increasing dissemination and consequent high death rate.

To the roentgenotherapeutist cancer is only a small corner of his field. His wagon is hitched to every star in the medical firmament, dermatology as well as internal medicine, surgery as well as gynecology.

It is quite true that the results of X-ray therapy in operable carcinoma are still *sub judis*. It is rather early to speak of permanent cures; all one can say is that the results so far have been decidedly encouraging.

As for inoperable cases, the administration of X-rays is the only service we can at present render the unfortunate victims, very often with a surprisingly gratifying outcome.

Pre-operative and post-operative X-ray treatment have now practically become the rule in the foremost gynecological clinics.

At one time it was considered by X-ray therapeutists that the suspicion of sarcomatous degeneration of a myoma was a contraindication in treating it with X-rays. Today we find Vintz and Seitz of Erlangen treat their cases of sarcomatous degeneration with the rays. They even make use of this treatment to differentiate between sarcomatous degeneration and cancer uteri. If the growth disappears or recedes shortly after the treatment, then they take it for granted that they are dealing with a sarcoma. Such is their confidence in roentgenotherapy for sarcomata.

I have already called to your attention the fact that the effect of the rays on a given tissue is regardless of the anatomic location. Sarcomata wherever found yield as readily to X-ray therapy as do the sarcomatously degenerated myomata.

In the foremost gynecological clinics of Europe, notwithstanding the prevailing distress there, we find a well organized X-ray laboratory with two or three machines operating every day where hundreds of suffering women are being treated and relieved of a variety of symptoms caused by various metropathies and uterine growths. In this class of patients, with few contraindications, the X-rays are now considered the remedy of choice by the best informed clinicians.

Beclere recently reported 700 cases of various gynecological disorders with successful results in 99 per cent, and only in 9 cases did he have to resort to surgery. In discussing the contraindications to X-ray therapy, he states that X-ray therapy is contraindicated only in cases in which surgical intervention, for some urgent reason, becomes absolutely necessary. In other words, there are hardly ever any contraindications.

The internist, too, has long found in roentgenotherapy a useful agent in a variety of conditions. Suffice for this occasion to mention the excellent results obtained in hyperthyroidism, and the relief, even though not always permanent, in case of certain blood disorders. Exposure to the soothing effects of small doses of roentgen rays will often relieve the excruciating pains of neuritis, when every other remedy has failed.

Roentgenotherapy today is still inits infancy. Its potentialities are immense. With proper co-operation between the roentgenotherapeutist and his confreres in the medical profession, these potentialities are sure to become actualities.

HYPERTROPHIC PYLORIC STENOSIS IN A CHILD FOUR YEARS OF AGE.

By T. S. USSERY, M. D., Norton, Va.

Most authors agree that this condition is found very early in life—three to six weeks of age,—about eighty per cent occurring in boys: the individuals seldom live longer than one year: hence the writer's reason for reporting this case.

Case Report

The child was first seen at home on March 2, 1924. Girl age four years, two months, fairly well nourished but undersize. Family history: Father and mother living and well: two older brothers living and well; one sister eighteen months younger, a normal child—tuberculosis and syphilis denied. Past history: Patient at birth weighed six pounds; normal delivery: breast fedo was considered hale and hardy till nine months of age at which time she had an acute attack of vomiting lasting about ten days. These attacks continued at intervals of about sixty days until present. Patient had had usual diseases of childhood excepting scarlet fever. Present illness: Patient began vomiting two days since; was unable to retain food or water—the vomiting was projectile in character.

Examination revealed fairly well nourished child, although somewhat dehydrated; palpable tumor the size of a goose egg at the upper right side of abdomen; visible peristalsis from tumor downward across abdomen; abdominal muscles very flaccid: slight distention extending across upper abdomen: skin elastic, but dry and scaly; tongue red, coated and dry; only bile stained mucus in stools; heart and chest negative.

Treatment: All food was withheld for twenty-four hours, saline proctoclysis, atropine sulphate, grains one to one ounce water, were given, ten drops on tongue every three hours until physiological effects were visible. At end of twenty-four hours child was fed to two ounces cream of wheat, cooked three hours, at intervals of four hours, with result that after another twenty-four hours she was able to retain this and in addition two ounces whole boiled milk every two hours. Within one week from time of onset child was taking full diet and had apparently fully recovered.

On April 24th, forty-five days later, I was called and found patient in same condition as previously described except more markedly emaciated. The same line of treatment was again carried out with no effect; patient continued to vomit, vomiting even ice water given on tongue with medicine dropper for ten days, when death occurred.

Post-mortem examination revealed a large stomach with capacity of sixteen ounces liquid; hypertrophy of muscular wall; circular fibers at pyloric orifice more so than at any other point; maked hyperplasia of mucous coat, beginning at the gastro-duodenal orifice and extending down the intestine for three inches; the overgrowth is very marked in both muscular and mucosa coats. The pyloric canal would admit a small probe with difficulty.

A CASE OF VINCENT'S ANGINA TREATED WITH ANTIMONY POTASSIUM TARTRATE INJECTED INTRAVENOUSLY.

By RAYMOND A. VONDERLEHR, M. D., Richmond, Va.

While it is not universally believed that the bacillus fusiformis and the spironema vincenti are the etiological organisms in Vincent's angina and allied conditions, their constant presence in these lesions is conceded by all, and it is highly probable that they are the causative factors. Antimony potassium tartrate has been used extensively and advocated by many authors as a specific in the treatment of granuloma inguinale: it has also been in more or less general use in the treatment of trench mouth. Because of the presence of the same organisms in Vincent's angina, Driscoll[1] has recently recommended the use of antimony potassium tartrate in the treatment of this disease also. In the following case, in which older methods were also used, it is suggested that the quick recovery was due to some procedure not hitherto practised.

H. B., white, female, aged 28 years, divorced, on examination, April 29th, 1924, complained of severe and constant headache and pains in the back, which began about eighteen hours before. A period of malaise had preceded the onset by about twenty-four hours. There was also some soreness of the throat, as well as dysphagia, but the headache was the predominating symptom.

Physical examination revealed a very red and swollen pharynx and left tonsil, while the right tonsil was less inflamed; the head was

1. Driscoll, T. Latane, Va. Med. Monthly, "The Treatment of Vincent's Angina." July, 1924.

otherwise negative. The anterior cervical glands were enlarged and somewhat tender; the rest of the lymphatic glandular system was normal. The heart, lungs and abdomen were negative. Temperature was 102 degrees; pulse 104. The temperature never went above 102 thereafter, and averaged 99.5; the average pulse throughout the course of illness was 95, and it never went above 105. At this time codeine, gr. i, with aspirin, gr. v, every four hours, and a gargle, with saturated hydrogen peroxide solution every four hours, were prescribed.

April 30th.—The patient continued to complain of headache; backache was much relieved. The throat, however, had meanwhile become worse; pain was severe and dysphagia marked. On examination, the left tonsil was very markedly enlarged and covered with a grayish yellow exudate; the right tonsil and pharynx were also inflamed and swollen. Halitosis was marked. Swabbing of the throat with mercurochrome solution every four hours was ordered to alternate with the gargle.

May 1st.—Examination of the throat revealed a depressed, ragged ulcer over the entire left tonsil and posterior pillar; covering this lesion was a dirty, grayish yellow membrane, which when removed revealed a red, bleeding surface. The use of all oral disinfectants was curtailed for six hours when smears and cultures were taken. The smears showed many fusiform bacilli and spironema vincenti; cultures were negative for the diphtheria bacillus. Hemoglobin was 80 per cent. Erythrocytes, 4,840,000. Total leukocytes, 18,400. Differential: polymorphonuclears, 76 per cent; small lymphocytes, 15 per cent; large mononuclears, 8 per cent ;and eosinophiles, 1 per cent. The blood Wassermann was negative. 0.025 gram of antimony potassium tartrate was administered intravenously in 2.5 c.c. of sterile distilled water without reaction.

May 2nd.—The pharyngeal and right tonsillar inflammation had almost subsided. The left tonsil still had the same appearance except that the swelling had somewhat disappeared. Another culture for the diphtheria bacillus was negative. The patient obtained relief from the headache.

May 3rd.—The ulcer had decreased slightly in size and swelling was much diminished. On May 4th the ulcer was about one-half its original size and swelling was negligible; 0.05 gram of antimony potassium tartrate was administered in 5 c.c. of sterile distilled water and this was followed by a slight reaction in which the emetic syndrome predominated. The day following, the tonsil was much improved, and on May 7th the entire throat was normal except for a very slight enlargement of the left tonsil.

611 *Medical Arts Building.*

Analyses, Selections, Etc.

Treatment of Syphilis with Bismuth.

In 1921 Sazerac and Levaditi introduced the salts of bismuth into the antisyphilitic pharmacopeia. The salts of bismuth or bismuth itself, introduced parenterally, have a considerable and sure spirillicide action. Treponema disappear rapidly from the cutaneous or mucous lesions, but not as rapidly as upon administration of arsenic, for instance 606 or 914. If taken by mouth it seems to lose this action. The effect upon the internal organs is just as sure. Aortitic syphilis has been cured by it, and good effects have been reported from it on the nervous system. This has been supposed because bismuth, contrary to arsenobenzol appears in great quantities in the spinal fluid. But it is not generally considered more effective than the arsenics. The Wassermann reaction is distinctly influenced, but slower than by arsenic.

As a whole, bismuth holds a place between arsenic and mercury, and probably more close to the latter. Milian, whose opinion was accepted by Leredde, estimates the curative value of arsenobenzol at 10, that of bismuth comparatively at 7, and mercury at 4.

Its two great indications are arseno resistance and arsenic intolerance. Among the first group are patients who do not at all or no longer derive benefit from the remedy. They derive quick improvement from bismuth or mercury. Either the spirochetes from the onset have certain qualities which counteract the arsenobenzol, or they become accustomed to it. Other writers call patients who, after a longer or shorter time, show recurrence even where correct arsenical treatment has been administered, or such as can not definitely be sterilized by arsenobenzol resistant. The fact is that one can in no case be sure of this lasting sterilization. The author gives bismuth treatment after all benefit seems to have been derived from arsenic which would seem possible, whether in hereditary or acquired, old or recent cases.

The number of bismuth preparations is large, the first to be used was the tartrobismuth of potassium and sodium, soluble salts, either in oily or aqueous solution. The latter is preferable, because it is not so apt to accumulate, but the oily is used more often because the injections cause less pain. The tartrobismuth contains variable quantities of metal bismuth, according to the special preparation. Sigmuth contains 0.025 gm. of bi-metal per c. c.; luatol 0.032 gm.; trepol (an oily suspension, while the other two were aqueous) contains 0.064 gm. of bi-metal per c.c. Another group is the iodobismuthates of quinin; they are insoluble and oily suspensions. Among them rubyl contains 0.019 c.c.; quinby 0.024; erythrolues 0.08; neoby 0.02 c.c. of bi-metal. The last is an iodobismuthate of vanadium A third group of the bismuths are the hydroxids, which are insoluble and in oily suspension. Among them muthanol contains 0.064 c.c. bi-metal; curalues 0.08; spirillan 0.08. Aside from these there are aqueous suspensions of pure bismuth metal. The best known is neotrepol which contains 0.096 bismuth metal per c.c. Ionoid of bismuth or colloidal bismuth contains only minute doses of metal bismuth (3 mg. per c.c.). Bismuthoidol, also a colloidal bismuth, contains 4 mg. per c.c. All bismuth preparations are sold in 1, 2, or 3 c.c. ampoules. There are many other preparations which are not so much in use (oxychlorid of bismuth or bischlorol, subgallate of bismuth, etc.) Bismuth has a spirillicide action equal to its metal contents.

The therapeutic dose varies from 0.20 gm. metal bismuth to 0.40 gm. or as much as 0.50 gm. per week. Some clinicians make one, others two or three injections per week. Some use 0.10 gm., others 0.15 gm., 0.20, or 0.25 as a single dose, some more. Each series of administrations total around 2 grams. The intermissions vary between one and two months. The Belgian Dermatological Society gives as a total 2.40 to 3 gm. The toxic dose is near the therapeutic, although not many definite statements are made. With hydroxids or iodobismuthates the author is of the opinion that 0.25 gm. per injection must not be exceeded, and 0.30 gm. per week is the maximum. He makes 10 injections at 6 days intervals, which will distribute the series of injections over two months. Then follows an intermission of one month.

Colloidal bismuth preparations and the tartrobismuthates are the only ones which should be used intravenously. If the intravenous method is employed the patient should have an empty stomach, and the injections be made while he is lying in bed, and slowly, the introduction lasting a minute. The dose of 0.05 metal should not be exceeded in an injection, and distilled water should be used, three parts to the dose. When puncturing the vein, the same needle should not be used which was employed in aspirating the liquid in the ampoule. Subcutaneous injections are painful and leave nodes All bismuth preparations can be used intramuscularly. They should be made into the sacro-lumbar mass or into the upper part of the hip. The best place is below the iliac crest. The oily suspensions must be carefully shaken before they are used. The left hand ought to compress the wound while the syringe is withdrawn. The injections are made alternately on the right and left sides.

The complications arising from bismuth therapy are either due to technical mistakes or to intolerance toward the drug, or the therapeutic reaction of the tissues. Those due to technical fault are not very serious. In the intramuscular use pain is often experienced. It passes from the point of injection on to the lower extremity, especially when tartrobismuthate is used. Injury to one of the important nerves must never occur. Suppuration is not permissible. Often the metal will be deposited at the point of injection and forms a permanent dark spot. This must likewise be avoided. The Herxhemier reaction is less frequent in bismuth administration than from arsenobenzol. If it appears, the dose must be diminished. Most patients tolerate bismuth very well, especially the hydroxids. Hemoclastic complications are rare, but nitritoid symptoms, especially after intramuscular injections, are not uncommon. They do not generally last long. Urticaria seems frequent. Nausea and vomiting will often accompany the rise of temperature. The remedy to counteract this shock is intramuscular or subcutaneous injection of 1 mg. of adrenalin. The lesions in the mouth are more frequent than the hemoclastic from bismuth. The prognosis of these lesions is good. Renal complications have become rare. The general symptoms are sometimes pronounced in the form of fatigue, asthenia, emaciation, pallor, and anemia.

The aim of bismuth treatment is steriliza-

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tion and the disappearance of infection. This may not always be possible, especially in older cases. The treatment must be early, energetic, continued and well controlled.

Every old case of spyhilis must be first treated with arsenobenzol or novarsenobenzol. It should be administered in 8 injections with growing doses, each series with an intermission of three weeks. If the patient shows intolerance of arsenobenzol, bismuth will be given.

A number of syphilitics do not tolerate bismuth well. This may be the case in patients who are similarly intolerant of arsenobenzol. If the reaction is slight one may continue the treatment in a milder form. If albuminuria exists or serious skin manifestations, or hemorrhage, the treatment seems contraindicated. If possible, the patient should be kept quiet for a long time. If bismuth can not be given one may try mercury, in the form of bichlorid of mercury pills, two or three at 0.01 gm. per day for three weeks, or intravenous injections of cyanid 0.125 gm. or 0.025 in five to 10 c.c. of distilled water every day for three weeks. If the patient does not tolerate this, one will have to leave syphilis to take its course.

The author is of the opinion that the mixed treatment is not advisable, except to follow one remedy by the other.—(*G. Drouet. Jour. de Med. de Paris.* 1923. *XLII*, 813, 837).

The Truth About Medicine

In addition to the articles enumerated in our letter of May 29th, the following have been accepted:

Abbott Laboraotries
  Benzyl Fumarate
Deshell Laboratories
  Petrolagar
    Petrolagar (Unsweetened)
    Petrolagar (with Phenolphthalein)
    Petrolagar (Alkaline)
Hoffman-La Roche Chemical Works
  Digalen-Roche (Cloetta)
    Ampules Digalen-Roche (Cloetta), 1.1 c.c.
    Tablets Digalen-Roche (Cloetta)
    Hypodermic Tablets Digalen-Roche (Cloetta)
  Oleo-Bi-Roche,
    Ampules Oleo-Bi-Roche, 2 c.c.
Mead Johnson and Company
  Mead's Cod Liver Oil
H. A. Metz Laboratories
  Sulpharsphenamine-Metz
    Sulpharsphenamine-Metz, 0.05 Gm. Ampules
    Sulpharsphenamine-Metz, 0.75 Gm. Ampules
    Sulpharsphenamine-Metz, 0.1 Gm. Ampules
    Sulpharsphenam ne-Metz, 0.15 Gm. Ampules
    Sulpharsphenamine-Metz, 0.3 Gm. Ampules
    Sulpharsphenamine-Metz, 0.45 Gm. Ampules
    Sulpharsphenamine-Metz, 0.6 Gm. Ampules
Frederick Stearns and Company
  Insulin-Stearns
    Insulin-Stearns Single Strength
    Insulin-Stearns Double Strength

NEW AND NON-OFFICIAL REMEDIES.

Neutral Acriflavine—Abbott, 0.1 Gm. Ampules.—Each ampule contains 0.1 neutral acriflavine—Abbott (see New and Non-official Remedies, 1924, p. 24). The Abbott Laboratories, Chicago.

Insulin—Stearns.—A brand of insulin. For a discussion of the actions, uses and dosage, see New and Non-official Remedies, 1924, p. 149. Insulin—Stearns is marketed: insulin—Stearns, single strength (5 c.c. vials, containing 10 units in each c.c.) and insulin—Stearns, double strength (5 c.c. vials containing 20 units in each c.c.) Frederick Stearns and Co., Detroit.

Digalen—Roche (Cloetta).—A sterile solution containing in each c.c. 0.3 Mg. of an active derivative of digitalis as isolated by Cloetta, containing 7.5 per cent. of alcohol. The actions and uses of digalen—Roche (Cloetta) are the same as those of digitalis. The average dose is from 1 to 2 c.c. (15 to 30 minims). The maximum daily dosage is 6 c.c. (90 minims). Digalen—Roche (Cloetta) is also suitable for intramuscular and intravenous injection. Intravenous injections of 1 c.c. (15 minims) may be repeated at intervals of one-half to one hour as necessary. Digalen—Roche (Cloetta) is also marketed as follows: Ampules digalen—Roche (Cloetta), 1.1 c.c.; tablets digalen—Roche (Cloetta) (equivalent to digalen—Roche (Cloetta) 0.5 c.c.); Hypodermic tablets digalen—Roche (Cloetta) (equivalent to digalen—Roche Cloetta), 1 c.c.). The Hoffman-La Roche Chemical Works, New York. (Jour. A. M. A., June 14, 1924, p. 1937).

Petrolagar.—A mixture composed of liquid petrolatum 65 c.c., agar 10 Gm., sugar and flavoring 2 Gm., sodium benzoate 0.1 Gm., water to make 100 c.c. Petrolagar has the actions of liquid petrolatum. It is claimed that the emulsification of the liquid petrolatum increases its efficiency, and that the agar adds soft bulk and tends to increase peristalsis. The average dose of petrolagar is 15 c.c. morning and night. Petrolagar is also marketed in the form of petrolagar (unsweetened), containing no sugar, petrolagar (with phenolphthalein), containing 0.33 Gm. phenolphthalein per 100 c.c., petrolagar (alkaline), containing milk of magnesia 25 c.c. per 100 c.c. The Deshell Laboratories, Inc., Los Angeles. (Jour. A. M. A., June 28, 1924, p. 2119).

PROPAGANDA FOR REFORM

Chologogues.—As early as 1868, a British committee appointed to investigate the subject arrived at the conclusion that mild mercurous chlorid (calomel), mercuric chlorid and taraxacum—all reputed chologogues—do not increase the flow of bile but probably act on the bile expelling apparatus. Recently the latest experimental procedure was applied to judge the status of a number of substances that have at various times been alleged to influence bile flow. With the exception of bile salts, negative results only were obtained with such substances as calomel and salicylates. All dependable evidence warrants the recommendation that clinicians consider the ad-

visability of abandoning therapeutic efforts to "stimulate" the liver through the use of substances having alleged chologogic effects. (Jour. A. M. A., June 7, 1924, p. 1867).

Gly-So-Iodonate.—A few months ago the Council on Pharmacy and Chemistry published a report on an alleged bactericide "Gly-So-Iodonate." The product is put on the market by a company whose name is much more imposing than its importance warrants—"The National Medical Research Laboratories," of Milwaukee, earlier known as the "Wisconsin Medical Laboratories." Charles E. Hutchings, who claims to be a "medical man," seems to have been the prime mover in putting "Gly-So-Iodonate" on the market. Hutchings, in letters, has stated that he is a "graduate of Kings College of London" and has claimed that he is a "member of Marquette Medical College." However, an inquiry directed to Kings College of London brought the reply that they had no record of a man of this name on the medical register. The Marquette University School of Medicine seems to be equally ignorant of Hutching's connection with that institution. After the Council's report had been published, the National Medical Research Laboratories sent broadcast a six page circular, three pages of which were devoted to what purported to be a "Partial List of Representative Industries Protecting Their Many Thousands of Employees from Infection With G-S-I." As it seemed reasonable to suppose that a concern which published a misleading formula for its product would be quite as likely to publish misleading references for the value of its product, some of the "representative industries" listed by the exploiters of "G-S-I" were written to. From the replies which were received, it seems evident that the basis for at least some of the references published by the exploiters of Gly-So-Iodonate rests on as flimsy a foundation as the alleged formula of the stuff and the educational claims of Charles E. Hutchings. (Jour. A. M. A., June 7, 1924, p. 1881).

Nonspecific Protein Therapy.—The mechanism involved in nonspecific therapy concerns cell stimulation. Weichardt assumes that this involves all cells. Other researches indicate that certain cell groups may be more particularly concerned. On stimulation, the cell becomes more permeable. Antibodies, enzymes, fibrinogen, etc., leave the cell. Under certain conditions a rapid destruction of organisms may take place to an extent that may overwhelm the patient by sudden liberation of toxic bacterial products. The first phase of the reaction corresponds in many ways to a parasympathetic effect. Later a second phase follows during which the patient is improved. This phase may exist for a considerable time and is clinically apparent in the improvement of the patient. No cases are reported in the literature in which chronic urticaria has been so treated although many related conditions on evident or probable sensitization have been improved (hay-fever, asthma, migraine, epilepsy, intermittent hydrarthrosis). Great caution must be used in the employment of the more active substances such as typhoid vaccine, peptone and collargol. Very small doses of relatively mild activity (tuberculin, casein, turpentine) are much more suitable. This has been the experience in chronic arthritis. The dosage must be adjusted to suit the patient, care being taken to keep the dose at all times just below that which causes a focal reaction at the site of the lesion. (Jour. A. M. A., June 7, 1924, p. 1883).

Morphin Addiction.—The so-called withdrawal symptoms which arise in those who have become accustomed to large doses of morphin are well known to all practitioners who are compelled to deal with such habitues. To account for these symptoms it has been alleged that the continuous taking of morphin causes the presence in the blood serum of a substance having a protective effect against this drug. However, it has been shown that the blood of a tolerant animal does not contain any protective substance against morphin, nor was there any substance capable of conferring any immunity to the toxic action of morphin on an animal into which it is injected detected in the blood serum of a human being who has acquired a high tolerance to morphin. Also, it has been proven that a specific toxic substance is not produced by habituation to morphin. Since some methods of treating drug addiction have been based on the belief that a toxic substance is formed, the time has arrived for seeking a new point of departure in the explanation of the various manifestations that are presented by drug addicts. (Jour A. M. A., June 14, 1924, p. 1976).

Whittington's Consumption Cure a Fraud.—The postal authorities have closed the mails to Frederick Graham and the Tuberculosis Home Remedy Company by the issuance of a fraud order. The Whittington "Cure" was the subject of a report in The Journal of the American Medical Association in 1916; analysis in the A. M. A. Chemical Laboratory at that time showed it to be a flavored syrup devoid of any potent ingredients except alcohol. The evidence brought out in the hearing by the Post Office authorities showed that the preparation was claimed to contain sugar, glycerin, alcohol and the extract matter from pyrus malus follia (apple leaves), gentian root, rhamnus purshiana (cascara) and licorice root. Analyses in the Bureau of Chemistry of the Department of Agriculture indicated the absence of gentian and the presence of only traces of cascara and licorice. No evidence was submitted to show how apple leaves had come to be hit upon as a "cure" for tuberculosis. (Jour. A. M. A., June 14, 1924, p. 1983).

Exploiting the Cancer Sufferer.—The week of the annual session of the American Medical Association was chosen as a propitious time to resurrect two discredited cancer cures. A Philadelphia paper announced that the cause of cancer had been discovered and that a treatment had been evolved which was producing remarkable results. The publicity dealt with the alleged cancer serum of T. J. Glover, of Toronto. This received some attention in 1921, but was not shown to be of value. The second "cancer cure" to be resurrected was that of Dr. Wm. F. Koch, of Detroit. Koch's nostrum was brought to the attention of the newspapers of the country by one C. Everett Field. It received some attention in 1921, and was reported on unfavorably. The new publicity given to these two discredited "cures" is producing the usual effect. Sufferers from cancer both directly and through their physicians are frantically trying to learn whether there is any warrant for the claims so widely broadcast. (Jour. A. M. A., June 21, 1924, p. 2054).

Atussin, Peptoproteasi, Paraganglina Vassale, Fosfoplasmina, Asmoganglina and Endo-Ovarina Tablets Not Accepted for N. N. R.—These products are manufactured in Italy and sold in the United States by the Neother Products Co., New York. Atussin is claimed to be a suprarenal preparation; Peptoproteasi, a gastric ferment preparation; Paraganglina Vassale, a suprarenal product; Fosfoplasmina, an egg yolk extract; Asmoganglina, an extract of the suprarenal and hypophysis, and Endo-Ovarina Tablets, an ovary preparation. In each case the statements made in regard to composition were indefinite and the therapeutic claims unwarranted. The booklet

which the Neother Products Co. uses as advertising for these products consists of 151 pages, presents a jumble of fact and fancy, and reads more like a patent medicine almanac than a scientific treatise. The Council on Pharmacy and Chemistry found Atussin, Peptoproteasi, Paraganglina Vassale, Fosfoplasmina, Asmoganglina and Endo-Ovarina Tablets unacceptable because: 1, their composition is indefinite or semisecret; 2, the therapeutic claims are unwarranted, and 3, their recognition would be the means of advertising proprietary products which are not accepted. (Jour. A. M. A., June 21, 1924, p. 2068.)

Dose of Thyroid For Children.—Thyroid effects are generally obtained by the administration of Dried Thyroid U. S. P. (Thyroideum Siccum). There is, however, no fixed dose of thyroid for children. The amount of dried thyroid to be administered must be determined in each case. A safe initial dose for a child three years of age would probably be 0.015 Gm. of dried thyroids two or three times a day. The best way is to start with a small dose and to gradually increase it until either satisfactory improvement or symptoms of intolerance manifest themselves. As soon as the desired effects are obtained or symptoms of intolerance manifest themselves, the dosage must be reduced. (Jour. A. M. A., June 21, 1924, p. 2070).

Therapeutic Lamps.—The Kromayer water-cooled mercury-quartz light and the Burdick and Hanovia mercury-quartz lights are considered sources of ultraviolet radiation of strong intensity, emitting a large quantity of long and short ultraviolet wave lengths. In contrast to this, carbon arc lamps, of which the ultra-sun lamp is an example, are used more particularly for the rays present similar to those in the spectrum of sun-light; namely, the invisible heat rays, the visible rays and the longer ultraviolet rays. The nonburning feature of the ultra-sun lamp is due to the practical absence or very weak intensity of the short ultraviolet rays which are the wave lengths that irritate and easily produce an erythema. The advertisers of the ultra-sun lamp stress the fact that the spectrum of their lamps is a continuous one, whereas the spectrum of the mercury-quartz light has gaps. No one has yet proved, however, that the presence of gaps in a spectrum is a drawback in the clinical use of that light. Furthermore, no one has proved that the burning or erythema-producing rays of the mercury-quartz lights are disadvantageous. It cannot be said that the carbon-arc lamp is less valuable than the mercury quartz lamp for certain diseases. The exact indications for the different sources of light have not been worked out. (Jour. A. M. A., June 28, 1924, p. 2138).

Vehicles for Prescriptions.—The following is a list of vehicles that can be used to prepare pleasant tasting mixtures: Aqueous Elixir of Glycyrrhiza N. F., Compound Elixir of Cardamon N. F., Compound Elixir of Almond, N. F., Compound Elixir of Vanillin N. F., Glycerinated Elixir of Gentian N. F., Elixir of Anise N. F., Red Aromatic Elixir N. F., and Compound Syrup of Asarum N. F. The formulas of these preparations may be found in the Epitome of the U. S. Pharmacopeia and National Formulary, published by the American Medical Association. (Jour. A. M. A., June 28, 1924, p. 2138).

Book Announcements

Fertility and Sterility in Human Marriages. By EDWARD REYNOLDS, M. D., and DONALD MACOMBER, M. D., Boston Mass. With a section on the **Determining Causes of Male Sterility,** by EDWARD L. YOUNG, JR., M. D., Boston, Mass. Illustrated. Philadelphia and London. W. B. Saunders Company. 1924. 8vo. 285 pages. Cloth. Price, $5.00.

Here is a comprehensive though brief monograph on a subject that is awakening general professional interest. The work brings together all the knowledge on the subject scattered through the literature, interpreting it by the large clinical experience of its authors.

Until recently none but gynecologists took any particular interest in sterility. Now the genito-urinary surgeon is assuming his part of the obligation and in view of the vast amount of mischief being wrought by the frantic efforts at birth control, the entire profession should be aroused. Prevention is now the watchword in enlightened medicine. Here is a book worth reading.

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Eat Your Way to Health. A Scientific System of Weight Control. By ROBERT HUGH ROSE, A. B., M. D., Instructor, Post-Graduate Medical School, New York. New Edition, thoroughly revised and enlarged. Funk and Wagnalls Company. New York and London. 1924. 12mo. Cloth, 246 pages. $2.00 net.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery and the Various Specialties. By Leading Members of the Medical Profession Throughout the World. Edited by HENRY W. CATTELL, A. M., M. D., Philadelphia, and COLLABORATORS. Volume II. Thirty-fourth Series, 1924. Philadelphia and London. J. B. Lippincott Company. 1924. Octavo. Cloth. Illustrated. 306 pages.

Mind and Medicine. By THOMAS W. SALMON, M. D., Professor of Psychiatry in Columbia University. New York. Columbia University Press. 1924. 33 pages. Address at the opening session of the College of Physicians and Surgeons, Columbia University, September 26, 1923.

Babies are Safer in England.

Only 69 out of every 1,000 babies born in England and Wales in 1923 died before reaching their first birthday. This is the lowest infant mortality rate recorded in the history of the country. The London rate was only 60. In the United States the provisional infant mortality rate for 1923 was 77, and for New York City, 67.

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Editorial

Angina Pectoris: Relief of the Pain by Surgery.

In London on May 5th last, at the meeting of the Royal College of Physicians, Professor K. F. Wenckebach,[1] of the Medical Clinic, Vienna, delivered a lecture which has attracted international notice, not only in current scientific, but also in lay publications. The subject discussed was "Angina Pectoris and the Possibilities of Its Surgical Relief." Probably little was added to our present knowledge of angina by the data presented. The explanations of the causes of the pain in angina pectoris and the pathology of the disease were dwelled upon in detail. But the latter part of the lecture, which discussed the possibilities of its surgical relief by the section of the pressor nerve of the vagus, supplying the proximal aorta, at once elicited enthusiastic interest and occasioned widespread comment. This was a natural reaction because it appeared to offer a possibility of a new avenue of relief to patients afflicted with a most distressing pain—heart pang.

The professional reader should realize at once that by no stretch of the imagination may it be considered that Professor Wenckebach's suggestion of surgical relief of the pain in any sense serves as a possible cure of the malady for it should be recalled that angina pectoris is essentially a disease and that the pain of angina is a symptom. The section of the nerve transmitting the pain merely blocks the route; it in no way changes the conditions creating the pain.

Physicians and laymen, alike, should quickly comprehend the significance of the suggestion and not permit the thought to gain headway that angina patients may find a cure by the surgical procedure mentioned and discussed by Professor Wenckebach in his recent London lecture.

In 1768 Herberden accurately described a disorder of the breast to which he gave the name Angina Pectoris although Morgagni and Rougnon and Jenner had previously described cases. The illustrious John Hunter died in an attack of angina. He made the remark that his life was in the hands of anyone who might make him angry. Many physicians have suffered from this malady. It is quite common in England and probably more common in America. It is associated with that general pathologic state known as cardio-vascular disease and it appears most frequently in persons of fourth to sixth decade although in young syphilitics, with vascular pathology, one meets it. Rather elderly men have angina more frequently than elderly women. The diagnosis of angina is essential to an understanding of the syndrome. The distress of cardiac asthma, any kind of a pain over the cardiac area, even the alarming discomfort of paroxysmal tachycardia or other heart irregularities should be clearly differentiated and should not be read to mean angina pectoris.

Angina pectoris is distinctly characterized by attacks of pain. Pain is the one symptom, although the heart may subsequently display other symptoms. This pain is influenced by a number of conditions and is associated with other signs, but pain in angina is the one characteristic symptom. Attacks of anginal pain may occur from three general exciting conditions: (1) a full stomach, (2) mental excitement or physical exertion and (3) cold.

The localization of the pain is rarely at the apex, but is usually substernal. The site of the pain is at the manubrium, sometimes at the xiphoid. But the local position of angina pain may at times be above and to the right of the sternum, at the level of the third or fourth rib. The characteristic feature of the pain is its radiating quality. It may radiate from the precordium to the back at a point opposite; it may spread to the left shoulder; it may run

1 British Medical Journal, May 10, 1924, p. 809.

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down the left arm on the inside, going as far as the wrist or little finger. The pain may go "north" to the neck covering both sides and reaching the angle of the jaw or scalp. The climax of the attack may be characterized by a general distribution of the pain over the whole chest, involving even the right arm.

At first the pain may be described as merely a pressure, or "heavy weight," associated with an alarming mental state. It may partake of a more severe quality such as "tearing," "piercing," "burning as hot fire," and rarely "stabbing." The degree and duration of the attacks permit of an attempt at classifying angina pectoris: the mildest form, showing substernal tension; mild form; showing pain of moderate severity; and severe form of angina, showing intense pain engrafted on a more fixed and evident organic disease of the heart and blood vessels and associated with apprehension of death and severe pain phenomena.

The onset of this pain is sudden, apparently set-off by some trivial, superficial cause such as excitement, sudden exposure, cold "that takes one's breath away," physical exertion, an overfilled stomach, or gas-distended abdomen. Of course, were heart and blood vessels involved, normal or approaching normal, such trivial conditions as mentioned would not result in the attack. So what are the conditions in the heart and blood vessels which really produce angina pectoris?

Wenckebach begins the discussion of the pain in angina by asking: "What is the constellation of causes, what the pathological anatomy and the pathological physiology of angina pectoris, and how could we explain the attack and its peculiar manifestations?" The subject is argued under three general heads. First, heart failure, or pathological conditions of heart muscle, is put in the balances and weighed. After covering the various points offered heretofore, Wenckebach concludes that purely clinical arguments "speak strongly against the heart itself being the starting point of anginal pain." This position is taken because the anginal pain is rarely associated during the attack by coincident shortness of breath or other evidence of heart failure, although such symptoms may follow upon the loss of the pain or the fading away of the anginal pain.

Again, Wenckebach also discusses coronary disease as the cause of angina pectoris, taking up the three forms of the disease of coronary arteries, namely, (a) embolism or sudden thrombosis, (b) chronic sclerosis or syphilis and (c) vasomotor spasm of coronary system. After taking up various phases of coronary disease as the cause of pain and leaving one rather uncertain as to the conclusions reached, Wenckebach leans to the diseases of the proximal part of the aorta as the cause of angina. He agrees with Clifford Allbutt by saying that he believes Allbutt is on the right track when he says that pathological conditions of the heart muscle and of the coronary arteries become of secondary importance, for nearly always there is also disease of the proximal aorta. While these conditions, he argues, may exist and may be the cause of death in angina, "they can not be regarded as the cause of angina." The pain of angina pectoris, it is argued, arises from the disease and strain of the walls of the aorta. So long as the heart is equal to the task of maintaining increased stress, pain of angina results, but when the heart muscle of the left ventricle fails and the pressure in the proximal aorta declines, pain fades and heart failure signs appear. Every influence which lowers the action of the heart, diminishes its output, allays excitement, releases peripheral vasoconstriction, reduces abdominal tension, helps in bringing the attack to an end, Wenckebach concludes.

It is argued that as the pathological area of the aorta can not be removed, like an aching tooth, it may be well to consider in chronic and recurrent angina cutting the nerve which conveys afferent impulses. The proximal aorta, it is shown in his paper, describing Tschermak's recent experiments, is supplied by the depressor nerve of the vagus. It is confined to the proximal aorta. "Its distribution has never been seen to extend to the heart. Its upper termination is in a group of cells contained in the jugular ganglion of the vagal trunk." A second group, lying close to the depressor group, belongs to fibres of the superior laryngeal nerve. There are numerous communications between the depressor and branches of the cervical sympathetic system described by Tschermak.

There is an anatomical difficulty in this operation. The depressor nerve in man has no "constant recognizable entity." Eppinger

and Hafer have made careful study of the location of the depressor nerve in man, and, as a result of information gained, performed section of the depressor in a severe case of angina in August, 1922. The operation was performed on both sides of the neck and the patient was relieved of both attacks and pain.

Wenckebach says that this operation has been performed in fourteen cases in Vienna. The following results were noted: "The operation was well borne; no complications resulted." Two of the fourteen patients died. The first case that died was given a "double-sided angina resection." The left resection gave perfect results. In the right no depressor was found and the vagus was divided below the point of origin of its inferior laryngeal branch. While the pain disappeared, the patient died suddenly without obvious cause. In the second case, no right depressor was found. A "sympathectomy" was done and rapid heart failure ensued characterized by pulmonary oedema.

The British Medical Journal, of May 10th, closed its editorial comment on "The Aortic Origin of Angina Pectoris" in the following words, which we cite for the benefit of our readers:

"That surgical division of the cervico-thoracic sympathetic containing the sensory nerves of the heart and aorta might relieve the pain of angina was suggested as long ago as 1899 by the physiologist, Francois Franck, but it was not until 1916 that Professor Thomas Jonnesco, of Bucarest, put this into practice by excising the whole of the cervical sympathetic with its three ganglia and also the first thoracic ganglion. Various surgical measures have since been employed in the treatment of angina by Bruning, Coffey and P. K. Brown, Hristide, and Stochelin and Holtz; Danielopolu, indeed, remarks that it is surprising that a certain degree of success appears to have followed all the different methods. The operations are usually carried out on the left side only, though Jonnesco and Hofer have performed a bilateral operation. It must, however, be remembered that in removing the cervico-thoracic sympathetic and its ganglia, or in cutting its trunk, fibres other than the centripetal aortico-cardiac fibres, such as the cardiac accelerators and vaso-constrictor filaments for the pulmonary vessels, are interrupted, and thus dangerous results, such as acute oedema of the lung, are possible. The ideal procedure is therefore to divide all the sensory fibres coming from the heart and aorta, and at the same time to avoid damage to the motor nerves to the heart. Professor Wenckebach has advocated section of what is thought to be the depressor nerve in man, corresponding to the depressor nerve in the rabbit, described in 1886 by Ludwig and Cyon, which is excited when the aortic pressure becomes excessive and thus causes pain. This branch, coming from the superior laryngeal or from the trunk of the vagus has accordingly been divided by Hofer, working with Eppinger, Professor Wenckebach's first assistant, who in April, 1923, reported five cases of angina thus operated upon with much benefit; since then they have carried out this procedure in other cases. There is, however, the drawback that this nerve is not by any means constant in man, and in cases in which it cannot be found Hofer has suggested section of the vagus trunk. Although more details are wanted about the course of the sensory branches from the heart and aorta, these early but encouraging results of operation for angina pectoris prove the value of applied physiology as well as the need for more knowledge."

News Notes

Virginia State Board of Medical Examiners.

At the meeting of the Virginia State Board of Medical Examiners, in Richmond, June 17-20, 1924, eighty-one applicants received certificates to practice in Virginia. They are:

Dr. Randolph L. Anderson	Boston, Mass.
Dr. J. Albert Avrack	Richmond, Va.
Dr. Vincent William Archer	Charlottesville, Va.
Dr. William Otis Bailey	Washington, D. C.
Dr. John M. Bailey	Richmond, Va.
Dr. Robert William Bess	Richmond, Va.
Dr. Charles Young Bidgood	Baltimore, Md.
Dr. Ryland Arwood Blakey	Richmond, Va.
Dr. James Lewis Blanton	Tobaccoville, Va.
Dr. Doris C. Boatwright	Jonesville, Va.
Dr. F. N. Bowles	Chester, Va.
Dr. John Mason Bishop	Richmond, Va.
Dr. Louis Christian Brand	Brand, Va.
Dr. Edwin Carter Brandon	Portsmouth, Ohio.
Dr. Boyd Franklin Brown	Richmond, Va.
Dr. T. S. Buckley	Richmond, Va.
Dr. Carl John Carter	Richmond, Va.
Dr. Noland M. Canter	Roanoke, Va.
Dr. Herbert G. Chissell	Petersburg, Va.
Dr. John Randolph Chitwood	Richmond, Va.
Dr. George Todd Colvard	Jersey City, N. J.
Dr. Donald Sneed Daniel	Weldon, N. C.
Dr. David Melvin Davis	Baltimore, Md.
Dr. John Andrew Gardner Davis, Jr.,	Greenwood, Va.
Dr. David Joseph Dolen	Richmond, Va.
Dr. John Edwin Dougherty	Richmond, Va.
Dr. Clay Welborne Evatt	Richmond, Va.

Dr. Nathan B. Feinberg ----------New York, N. Y.
Dr. Eugene L. Flippin ----------Washington, D. C.
Dr. Henry Thomas Garriss----------Hazelton, Pa.
Dr. Lula Woods Garst ----------Richmond, Va.
Dr. William Edward Geiger ---------Richmond, Va.
Dr. Richard Spencer Gill ----------Petersburg, Va.
Dr. Robert Burwell Groves ----------Lowell, N. C.
Dr. Chester E. Haberlin ----------Richmond, Va.
Dr. Grady O'Ferrell Haynes----------Coeburn, Va.
Dr. Lucy Scott Hill ----------Locust Dale, Va.
Dr. Charles Edward Holderby -------Richmond, Va.
Dr. Claude Gibson Hooten ----------Roanoke, Va.
Dr. Henry Amiss Hornthal ----------Richmond, Va.
Dr. John Richard Howard----------Richmond, Va.
Dr. S. Edwin Hughes, Jr., ----------Richmond, Va.
Dr. J. Tibble Thomas Hundley, Jr.,-Bridgeport, Conn.
Dr. Benjamin Edward Hunt----------Jeffs, Va.
Dr. W. C. Kappes ----------Richmond, Va.
Dr. David Wright Kelly, Jr. ----------Culpeper, Va.
Dr. Raymond DeVan Kimbrough-Charlottesville, Va.
Dr. A. D. Lambeth ----------Newport News, Va.
Dr. Joseph Havanes Luscinian -----Blacksburg, Va.
Dr. William F. Matthews ----------Richmond, Va.
Dr. W. H. McCarty ----------Chatham Hill, Va.
Dr. Randolph McCutcheon ----------Richmond, Va.
Dr. Thomas Francis McDermott -----Richmond, Va.
Dr. William Ambrose McGee --------Richmond, Va.
Dr. Rees Morgan ----------Charlottesville, Va.
Dr. Roy L. Noblin ----------Richmond, Va.
Dr. Arthur Douglas Parker---------New York, N. Y.
Dr. Thomas Gerald Peacock ----------Crewe, Va.
Dr. Daniel Mallory Prince ------Charlottesville, Va.
Dr. S. H. Rivers ----------Charlottesville, Va.
Dr. Hall Holloway Ratcliffe -----Charlottesville, Va.
Dr. William Ernest Riley----------Lynch, Ky.
Dr. Aaron Seldes ----------Richmond, Va.
Dr. Ernest Clay Shull ----------Winchester, Va.
Dr. William Edward Smith ----------Farmville, Va.
Dr. Allen Barry Sloan ----------Petersburg, Va.
Dr. P. D. Stout ----------Bluff City, Tenn.
Dr. D. B. Stuart ----------Richmond, Va.
Dr. Giles Sydnor Terry----------Richmond, Va.
Dr. Thurston Moody Turner ---------Louisville, Ky.
Dr. Albert Cecil Van Reenen --------Richmond, Va.
Dr. C. T. Upchurch ----------Richmond, Va.
Dr. Adrian Xavier Urbanski ---------Richmond, Va.
Dr. H. H. Ware ----------Richmond, Va.
Dr. T. B. Washington ----------Woodford, Va.
Dr. Marion Howell Watson------Charlottesville, Va.
Dr. Rachel Fletcher Weems ----------Ashland, Va.
Dr. F. W. M. White ----------Windsor, N. C.
Dr. James Morehead Whitfield, Jr.---Richmond, Va.
Dr. Pauline Williams ----------Richmond, Va.
Dr. William Plummer Yancey ---------Danville, Va.

A Pleasure in Store for Virginia Doctors.

The success of the Staunton meeting of the Medical Society of Virginia depends not only upon the number of members who attend but also upon their enthusiasm. The Augusta County Medical Association and the friends of these doctors are bending their energies to make this a banner meeting. Let's march upon them in large numbers. Several interesting papers on the attractions of the surrounding country have appeared in our last issues; another is promised for next month. Apart from the scientific interest of these annual meetings, there is nothing so beneficial to a doctor as to lay aside his work for a short space of time and mix with professional friends who come from far and near. They bring back pleasant reminders of college and other days which we do not wish to forget.

Dates for our meeting are October 14, 15, 16 and 17. If you wish to present a paper, send your title to the Society's offices in Richmond. Be sure to be "among those present." Bring your wife with you. She should be interested in the Woman's Auxiliary of the State Society and you both will have a good time.

Vacations of Some Virginia Doctors.

Dr. and Mrs. E. B. Nuckols, of Cumberland, accompanied by their daughter and son, left August 1st, on a motor trip to Virginia Beach, going by way of Petersburg, Suffolk and Norfolk. They expected to spend a ten days' vacation at the beach.

Dr. F. J. Wright, Petersburg, recently returned from a visit to Abingdon, Va.

Dr. and Mrs. Stuart McGuire, Richmond, sailed for Europe on August 1st. They expect to be away about six weeks.

Dr. and Mrs. M. H. Harris and daughter, West Point, recently visited relatives in Louisa County, Va.

Dr. H. L. Segar and several friends, of Warsaw, attended the Democratic convention in New York.

Dr. and Mrs. E. H. Terrell and daughter, of Richmond, spent some time at Princess Anne Hotel, Virginia Beach.

Dr. and Mrs. W. R. Aylett, Newport News, visited Atlantic City, N. J., the middle of July.

Dr. and Mrs. R. H. Wright, of Richmond, left early this month for a visit to relatives in Boston, Mass.

Dr. Robert Preston, Richmond, recently spent sometime with his family at their cottage at Fisher's Island, N. Y.

Dr. and Mrs. R. M. Wiley and family, Salem, were visitors in Norfolk, Va., recently.

Dr. William P. McGuire, Winchester, is home again after a visit with his grandson to Atlantic City, N. J.

Dr. and Mrs. J. R. Adams, Blackstone, took a motor trip through the Valley of Virginia in July, and visited many places of interest in this State.

Dr. and Mrs. H. Wallace Blanton, Richmond, took a motor trip through the New England states and spent a while at Journey's End, Maine.

Dr. and Mrs. Joseph Hume, Norfolk, were recent visitors in Richmond.

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Dr. and Mrs. John O. Boyd, Roanoke, recently visited relatives in Winchester, Va.

Dr. and Mrs. Clifton M. Miller and children, Richmond, left August 1st, for their cottage at Old Sweet Springs, where they expect to spend the month of August.

Dr. C. S. Dodd, Petersburg, Va., was a recent visitor in Martinsville, Va.

Dr. and Mrs. H. S. Daniel, returned to their home in Louisa, the middle of July, after a short stay in Richmond.

Dr. and Mrs. Wyndham B. Blanton and children, Richmond, visited Mrs. Blanton's parents in Winchester, Va., last month.

Dr. and Mrs. Charles C. Page, Orange, left the middle of July to spend a month in Canada.

Dr. and Mrs. Thomas F. Gill and sons have returned to their home in Richmond after a vacation spent in the mountains and at the seashore.

Dr. W. Nelson Mercer and his mother, of Richmond, spent a part of July in motoring through the North, and visited among other places, New York City, Albany, Boston, Philadelphia and Atlantic City. Dr. Mercer is now with the National Guard of Virginia on their annual encampment trip.

Dr. Mary Baughman and her mother, of Richmond, are enjoying a motor trip through the Northern States and Canada.

Dr. and Mrs. B. W. Switzer, of Lexington, have been spending some time at Rawley Springs, Va.

Dr. J. A. Riffe has returned to his home in Covington, after a visit to friends in Baltimore, Md.

Dr. E. L. Sutherland, of Charlottesville, recently stopped over in Pulaski, en route to Hillsville, Va., his former home, for a visit.

Dr. and Mrs. T. W. Edmunds and Dr. and Mrs. Julian Robinson, Danville, left the last of July on a motor trip which will take them through the New England States, Canada and in the Great Lakes section. They expected to be away for several weeks.

Dr. H. Taylor Hawkins, Clover, has recently been the guest of his parents in Highland Park, Richmond.

Dr. and Mrs. James Leftwich have returned to their home at Highland Springs, after a motor trip in the South.

Dr. and Mrs. H. Stuart MacLean, son and daughter, Richmond, have been on an extended western trip, visiting many points of interest.

Dr. and Mrs. J. D. Foltz and children have returned to their home in Richmond, after a visit to Tappahannock, Va.

Dr. and Mrs. P. E. Tucker, Buckingham, Va., were recent visitors in Richmond.

Dr. and Mrs. Karl Blackwell and children of Richmond are visiting relatives near Warrenton, Va.

Dr. and Mrs. R. L. Williams, Norfolk, are spending sometime visiting in Texas, and will not return home until early Fall.

Dr. and Mrs. W. H. Higgins have returned to their home in Richmond, after a motor trip through Kentucky.

Dr. and Mrs. Charles V. Carrington, of Richmond, have been visiting friends at Locust Valley, L. I.

Dr. and Mrs. J. V. Jordan, of Covington, left recently on a motor trip and will spend some time at Smith's Falls, Ontario.

Married.

Dr. Ward E. Newcomer, McClellandtown, Pa., and Miss Norma Stuart Johnson, Richmond, June 21. Dr. Newcomer graduated from the Medical College of Virginia, Richmond, this year and received appointment as interne at the Harrisburg General Hospital, Harrisburg, Pa.

Dr. John Randolph Chitwood, Sylvatus, Va., and Miss Dorothy Leonard Lee, Richmond, July 19. Dr. Chitwood graduated from Medical College of Virginia this year and received appointment as an interne at Stuart Circle Hospital, Richmond.

Dr. William Samuel Scott and Miss Mary Powell Wilson, both of Fredericksburg, Va., July 31st.

New Board of Health Appointed.

The new State Board of Health, composed of seven instead of fourteen members, has been appointed by Governor Trinkle. The reduction in size of the Board was one of the many reforms suggested by the Commission on Simplification and Economy and one of the few adopted by the last General Assembly. The new board is composed of Mr. John T. Daniels, of Cape Charles, one year; Dr. H. M. Miles, Norton, two years; Dr. Wm. M. Smith, Berryville, three years; Dr. Guy R. Harrison, Richmond, four years; Dr. W. T. Graham, Richmond, five years; Dr. George B. Lawson, Roanoke, six years; Dr. Lawrence T. Royster, University, seven years. Dr. Miles is the only new member of the board, the other six having served on the board which went out of existence on July 1st.

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At a meeting of the new board, held July 29th, Dr. Wm. M. Smith, Berryville, was elected president, and Dr. Guy R. Harrison, Richmond, was elected secretary.

Dr. John William R. Smith,

Who graduated from the University of Virginia, Medical School, in 1900, and who has made his home for sometime at Hillsboro, W. Va., has returned to Virginia and located in Charlottesville.

Dr. James N. Ellis,

Of Atlanta, Ga., formerly of Richmond, Va., recently visited friends and relatives in Buckingham County, Va.

Dr. E. C. Cobb,

Penola, Va., has been elected secretary of the Caroline County Shrine Club. This club is composed of Shriners of Caroline County, most of whom hold their Masonic membership in the Bowling Green Lodge, who have organized this club as a purely social organization.

Dr. Thomas B. Washington,

Who graduated in this year's medical class at the Medical College of Virginia, visited friends in Fredericksburg, Va., en route to Gouverneur Hospital, New York, at which place he received appointment as interne.

Dr. E. L. W. Ferry,

Millers Tavern, Va., was elected a member of the board of directors of the Essex County Fair Association at a meeting held recently at Tappahannock, Va.

Dr. William E. Croxton,

Who has been practicing for some years at King William C. H., Va., has bought a home in West Point, Va., and moved there to practice medicine.

Dr. Claude Lee,

Of the class of '05, University of Virginia, Medical School, recently underwent an operation for appendicitis at St. Andrew's Hospital, Wusih, China, of which he has charge. Dr. Lee returned to his mission work in China last summer, after a furlough spent with relatives and friends in Virginia.

Clinic Held in Covington.

Under the auspices of the Alleghany County Medical Society, Dr. H. Page Mauck, of Richmond, held a clinic for crippled children in Covington, Va., last month. He was assisted by local physicians and a trained nurse.

Virginia Pharmaceutical Association.

At the meeting of this association held recently at Natural Bridge, Va., L. R. Shadwell, Richmond, was elected president; A. L. I. Winne, Richmond, and Miss Maud Lambert, Roanoke, were elected secretary and treasurer, respectively.

An address delivered by the Hon. R. A. Fulwiler, Federal Prohibition Director for Virginia, directed attention to the seemingly unwarranted issuing of liquor prescriptions by some of the physicians of the State, and the following resolutions were unanimously adopted by the organization, as a consequence of the reference to the situation:

WHEREAS it was to the great pleasure and profit of the members of The Virginia Pharmaceutical Association, in convention assembled, to listen to a most instructive address by the Hon. R. A. Fulwiler, Federal Prohibition Director for Virginia, and

WHEREAS, in that address, it was forcefully brought to the attention of the members of the Association that the sole legitimate source of supply of whiskey and other intoxicants for medicinal purposes only is through them as registered pharmacists, and

WHEREAS, it was also forcefully brought out that these intoxicants cannot be supplied to the public save and except on the prescription of a reputable licensed physician given to a patient whom he thus certifies to be in need of same, and solely as a patient of said physician, and

WHEREAS, this places squarely upon the shoulders of the physician, and not upon the pharmacist, the responsibility of saying who is entitled to same under the provisions of the law. Therefore, be it

RESOLVED by The Virginia Pharmaceutical Association in convention assembled that we hereby request the earnest and conscientious co-operation of the physicians of the State to the end that the letter and spirit of the Volstead Act be strictly observed and enforced, and thus let Virginia say to the world that we, upon whom rests the responsibility of supplying these much-sought remedial agents, stand "four square" for a careful and conscientious observance of the provisions of law to the end that abuses shall be stopped. Be it further

RESOLVED, That we hereby offer to the enforcement officers hearty and active co-operation in their efforts to place Virginia on a high plane of law observance, a place she has ever striven to maintain, and be it further

RESOLVED, That these resolutions become a part of the permanent record of our Association, that a copy be sent to the Hon. R. A. Fulwiler, Federal Prohibition Director for Virginia, and that a copy be sent to the secretary of the Medical Society of Virginia.

Dr. R. S. Goodman,

Formerly of Zion, Va., has moved to Charlottesville, Va., for the practice of his profession.

Dr. and Mrs. Thomas A. Lamb,

Dunbar, W. Va., visited relatives in Richmond, on their return from attending the Democratic Convention.

Dr. Francis W. Upshur,

Richmond, announces removal of his offices to 1209 West Franklin Street, this city.

State Board of Health Establishes New Branch Laboratory at Harrisonburg, Virginia.

In accordance with its policy of furnishing, so far as it is able, laboratory service to all sections of the state, the State Board of Health opened, July 1st, a branch laboratory at Harrisonburg, Virginia. This laboratory is being operated jointly with the Rockingham Memorial Hospital and will serve not only as a public health and hospital laboratory but also as a general clinical laboratory for that section.

The undertaking is being supported by funds from the hospital, from the State Board of Health, and from the International Health Board. All work will be done in this branch laboratory that is done at the central laboratory in Richmond except the Wassermann test, but this may be added later.

The laboratory is, at present, in charge of Mr. A. A. Shanks, of the State Laboratory in Richmond, but will later be directed by Miss Louise Story, formerly of the Memorial Hospital and now in the Richmond Laboratory.

The Harrisonburg branch will serve a very valuable purpose for the physicians and people of the Shenandoah Valley and is filling a real and long felt need. This is the second branch to be organized and it is hoped that increased appropriation will make it possible eventually to reach every section of the state.

Children's Memorial Clinic.

A clinic for childen, with the above name, was opened in Richmond on the seventh of August. The clinic will be located at 1001 East Clay Street and will confine its work largely to medical diagnosis and psychiatric diagnosis and guidance. The organization committee was composed of representatives from all the children's welfare agencies of Richmond, including the State and City Departments of Public Welfare, the State Board of Health, the Medical College of Virginia, the Medical Department of the City Schools, the Juvenile and Domestic Relations Court, the McGuire Newton Foundation, the Crippled Children's Hospital, the Associated Charities and the Instructive Visiting Nurses' Association. Children of all ages, races and conditions will be received. Dr. Basil B. Jones, of this city, is to be medical director and head of the department of pediatrics. Other members of the staff will be announced shortly.

The McGuire Newton Foundation, one of the organizations interested in this work, will erect a memorial tablet to the late Dr. McGuire Newton, of Richmond, in the hall of the clinic. The tablet bears the following inscription, which in a way gives the keynote of the institution's purpose:

"In memory of
McGuire Newton, M. D.
1876-1923.
Physician to Children
In gratitude to him, patients, friends and admirers have organized the McGuire Newton Foundation and have co-operated with other agencies in establishing this clinic to perpetuate and enlarge this service to childhood, to which he devoted his life."

Dr. John Bell Williams,

Of the dental faculty of the Medical College of Virginia, has been named by Governor Trinkle as a member of the Board of Visitors of the Medical College of Virginia, to succeed the late Judge George L. Christian. The appointment is for life.

Dr. and Mrs. Carroll A. Davis,

Of Logan, W. Va., last month visited friends in Orange, Va. Dr. Davis formerly lived at Eagle Rock, Va.

Attention—Former Illinois Doctors—Attention!

Will any and all doctors, former residents of Illinois, or descendants of pioneer physicians of the "Illinois country," communicate at once with the Committee on Medical History, Illinois State Medical Society, No. 6244 North Campbell Avenue, Chicago, Illinois.

Under the sponsorship of the Illinois State Medical Society there is in preparation "A History of Medical Practice in the State of Illinois" that must go to the printer at an early date. In order that this volume may be accurate and complete, all possible assistance is asked from every source, as to personal data and experiences, including diaries, photographs and similar documentary mementoes of pioneer Illinois doctors and of progressive phases of medical practice, as well as of achievements in fields other than those of medical science. Prompt return in good condition is promised for anything loaned the committee, the personnel of which is:

O. B. Will, M. D., Peoria, Ill.; C. B. Johnson, M. D., Champaign, Ill.; Carl E. Black, M. D., Jacksonville, Ill.; George A. Dicus, M. D. Streator, Ill.; James A. Hutton, M. D., Chicago, Ill.; and Chas. J. Whalen, M. D., Chicago, Ill., chairman.

The scope of the volume will range from the discovery of Illinois to modern times. Through

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this period of over 250 years there is much of thrilling interest to be detailed. Collection of the human interest data can come only from the families or closest friends of the pioneers, many of whom long ago removed to distant sections of the United States. Through the kindness of editors of various medical journals, it is hoped to reach those who may be able to loan valuable material to the compilers who guarantee careful guardianship of anything sent for publication.

Some of the subjects touched will be: Physicians accompanying early explorers; government surgeons and physicians in attendance at the forts; early medicine in Illinois; theories of healing from the days of the Aborigines through the mound-builders; French and English explorers; the ante-boundary days; sporadic settlers; medical attendants for the covered wagon; herb doctors; primitive surgery; medicine and missionaries; migration of pioneer physicians to new territory; the circuit-riding and "saddle-bag" doctors and their burdens, triumphs and perils; pioneers as "utility citizens;" Illinois men in war time—there are four conflicts to be considered since the opening of the Nineteenth Century; Illinois medical men away from medicine, i. e., in industry, in science, in belles-lettres—art, music and literature.

Photographs especially are desired. Also copies of letters, statements of "cures" and "new methods," diaries and the like.

The Inter-State Post-Graduate Assembly,

Directed by the Tri-State District Medical Association, extends a hearty invitation to the physicians of America who are in good standing in their State or Provincial Societies to attend the annual assembly which is to to held at Milwaukee, Wisconsin, October 27-31, five full days of post-graduate work. The program includes the names of many eminent men.

INVITATION TO AMERICAN PHYSICIANS

This Association is supervising an Inter-State Post-Graduate Clinic Tour to Canada, British Isles and France to start May 18, 1925. Leading teachers and clinicians of Canada and Europe will arrange and conduct clinics and demonstrations in many of the clinic cities. Besides the main tour special tours to practically all the leading centers of Europe will be arranged. Sight-seeing trips to all places of interest in the countries visited will be included in the regular tour.

Cost of tour, including first-class hotels, board, steamship, clinic arrangements and all ordinary traveling expenses, under $1,000.00. The tour is open to physicians in good standing in their State Societies, their families and friends who are not physicians.

For information, write the Managing-Director, William B. Peck, M. D., Freeport, Illinois.

Dr. Robert B. Hiden,

Who graduated from University of Virgina Medical School in 1923 and was instructor in physiology and biochemistry at that school last year, is now at Massachusetts General Hospital, Boston.

Dr. Adam T. Finch,

Chase City, Va., left early in July for St. Louis, Mo., where he is taking a special course in X-ray treatment at the University Hospital and Post-Graduate School.

Dr. P. L. Hill, Jr.,

Of the class of '17, Medical College of Virginia, expected to sail from Vancouver, August 14th, on the Empress of Canada, to resume his mission work in Korea. Dr. Hill has been on a furlough in this country for two years and will be gone this time for seven years. He is connected with the work at Choonchun, Korea.

Dr. Edmund Horgan,

Washington, D. C., sailed the last of July for Europe and will not return home until about the first of October.

Dr. Churchill Robertson,

Salem, Va., after completing a year's internship at Long Island Hospital, Boston, Mass., has accepted the position as physician for the Baptist Orphanage at Salem, Va.

Dr. Allen T. Hawthorne,

Harrisonburg, Va., left the first of July for Baltimore, where he is taking up post-graduate work. Upon completion of his course, Dr. Hawthorne expects to return to Harrisonburg.

Dr. J. W. Walters,

Lynchburg, Va., has been suffering with a fractured arm, which was the result of an automobile accident the latter part of July. He with several others was on his way to attend a meeting of Kiwanians in South Boston, Va., when the car in which they were riding turned turtle near Halifax. The other occupants escaped with bruises.

Dr. William Meredith,

Gouldin, Va., has been named a member of the Hanover County Board of Public Welfare.

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Dr. J. C. Darden

Has returned to his home in Salem, Va., after taking post-graduate work in medicine at Johns Hopkins University, Baltimore.

Appointments by Governor.

Dr. R. Bruce James, Danville, Va., has been appointed a member of the board of visitors of the Virginia Military Institute at Lexington, for a period of four years, beginning July 1, 1924.

Dr. Robert H. Courtney, of Richmond, was appointed a member of the Governor's advisory board on mental hygiene. This board examines all prisoners admitted to the penitentiary, classifying them with a view to placing them at the work to which they are best suited.

Hookworm Resurveys in the United States.

The following extract from the 1923 report of the International Health Board of the Rockefeller Foundation, as an evidence of good accomplished, should prove of interest:

"During the years 1910 to 1915, hookworm campaigns were conducted in eleven southern states—Virginia, North Carolina, South Caroline, Georgia, Alabama, Mississippi, Louisiana, Texas, Arkansas, Tennessee, Kentucky. Special investigation was made of the infection rate among rural school children between the ages of 6 and 18 years, as it was early recognized that in this age group the severest infections occur.

"During the years 1920 to 1923, 81 of the 422 counties were resurveyed. In the original surveys of these counties, 89,857 rural school children were examined, of whom 49,471 were infected, giving a rate of 55.1 per cent. In the 1920-1923 surveys 44,090 children were examined, of whom 12,236 were infected, giving a rate of 27.8 per cent, *a reduction since* 1910-1915 *of* 49.5 *per cent.*

"Of the 81 counties above mentioned, 16 in five states—Virginia, North Carolina, South Carolina, Georgia, and Alabama—were resurveyed during 1923. In the original survey of these 16 counties 3,748 children, of 6,331 examined were infected, giving a rate of 59.2 per cent. In the 1923 surveys 2,058 were positive out of 8,598 examined, giving a rate of 23.9 per cent *or a reduction since the original surveys of* 59.6 *per cent.*"

Virginia Baptist Hospital Opened.

The first unit of the Virginia Baptist Hospital, located in Lynchburg, Va., was dedicated on July 10th, and opened for reception of patients on the 12th of the month. Miss M. E. Cowling is superintendent. The hospital has been built and will be provided for out of a fund raised by the Southern Baptist Church. It is located on the Natural Bridge Road just out of the city, but has street car service and all city conveniences. Construction will be started at once of a second unit and a home for nurses.

Doctors Appointed on Committees for Military Defense Day.

Governor Trinkle has appointed several doctors on the civilian committees for the Military Defense Day test to be held throughout Virginia and the whole country on September 12, in connection with the national mobilization demonstration. Some of these are Dr. E. C. Levy, Richmond; Dr. Wm. F. Drewry, Petersburg; Dr. Geo. B. Wood, Emporia; Dr. R. P. Kelly, Lynchburg; and Dr. J. Edward Harris, Berryville.

Dr. T. Welch Dew,

Bumpass, Va., has bought a home in Fredericksburg, Va., and plans to move to that city this Fall.

Judges Named for the Modern Hospital's Prize Essay Competition.

Dr. Haven Emerson, Dr. Michael M. Davis, Jr., of New York, and Dr. Willard C. Rappleye, of New Haven, Conn., have been named as members of the committee of award of The Modern Hospital's prize essay competition on "The Interrelationships of Hospital and Community."

Dr. Haven Emerson is professor of public health and preventable diseases of Columbia University, New York. He was at one time commissioner of health of the City of New York and during the past three or four years has made a number of community hospital and health surveys, notably in Cleveland, Ohio, San Francisco, Cal., and Louisville, Ky.

Dr. Michael M. Davis, Jr., is executive secretary of the Committee on Dispensary Development of the United Hospital Fund of New York. Dr. Davis was for a number of years director of the Boston Dispensary and is the author of numerous books on hospital, dispensary and public health subjects.

Dr. Willard C. Rappleye is superintendent of New Haven Hospital, New Haven, Conn., and professor of hospital administration in the Yale University school of medicine. He was at one time director of hospitals for the University of California and later served as exe-

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cutive secretary of the committee on training of hospital executives.

This committee will meet, probably in New York, to consider the essays submitted, following the formal closing of the contest on November 1, 1924.

Registrations for the competition will be received at the Chicago office of The Modern Hospital up to September 15.

Further information may be obtained by addressing The Contest Editor, The Modern Hospital, 22 East Ontario Street, Chicago, Ill.

Dr. D. Lane Elder

Has been re-elected mayor of Hopewell, Va., by unanimous vote of the newly elected council under the city manager form of government.

The Bedford County Medical Society

Held its regular monthly meeting, July 28, at which time Dr. Don Preston Peters, Lynchburg, read an excellent paper on "Differential Diagnoses." This was briefly discussed and several members made reports of clinical cases. Upon completion of the business meeting a banquet was held. Officers of this society are Dr. W. O. McCabe, Thaxton, president; Dr. R. A. Bennett, Bedford, vice-president; Dr. J. A. Rucker, Bedford, secretary-treasurer.

The Southwestern Virginia Medical Society

Will hold its next meeting September 11th and 12th in Marion. The preliminary program includes a clinical session instead of the regular symposium. "Fractures" will be discussed by Dr. J. Coleman Motley, of Abingdon, leader, followed by Dr. Wm. R. Rogers, Bristol; Dr. Roy Hoover, Roanoke; Dr. A. M. Showalter, Cambria; Dr. J. A. Noblin, Radford; Dr. Claude Moore, Roanoke; Dr. W. L. Powell, Roanoke; Dr. W. C. Caudill, Pearisburg; and Dr. John M. Ropp, Roanoke. "Obstetrics" will be discussed by Dr. Chas. F. Graham, of Wytheville, leader, followed by Dr. W. R. Cushing, Dublin; Dr. W. W. Chaffin, Pulaski; Dr. R. H. Wooling, Pulaski; Dr. Z. V. Sherrill, Marion; Dr. R. T. Thornhill, Pulaski; Dr. S. T. Yeatts, Floyd; Dr. J. O. Boyd, Roanoke; and Dr. E. M. Chitwood, Wytheville.

Voluntary papers will be read by Drs. W. H. Ribble, Wytheville; J. M. Miller, Crockett; J. O. Boyd, J. T. McKinney, A. P. Jones, and J. D. Willis, of Roanoke; Nat. Copenhaver, Bristol; T. C. Harris, Radford; and R. R. Goad, Hillsville. Dr. Stewart R. Roberts, Atlanta, Ga., as invited geust, will read a paper on "Therapeutics of the Diseases of the Circulation." As this is the annual meeting the president, Dr. S. S. Gale, of Roanoke, will deliver his address and the election of officers will be held. Dr. E. G. Gill, Roanoke, is secretary of the association.

Dr. William B. Meares,

Formerly of Linwood, N. C., of the class of '15, University of Virginia Medical School, has located in Richmond, with offices at 602 Professional Building. He will limit his work to internal medicine and minor surgery. From the time of his graduation until January last, Dr. Meares has been connected with the Panama Canal Health Department.

Dr. W. E. Dickerson,

Of the class of '22, Medical College of Virginia, later serving an internship at Retreat for the Sick, Richmond, has located in Princeton, W. Va., where he is connected with the staff of Memorial Hospital, at that place.

Dr. W. Calhoun Stirling,

Who, for the past four years has been doing genito-urinary surgery in connection with the Lawrence Clinic, at Winston-Salem, N. C., moved to Washington, D. C., the first of this month and has offices at 1720 Q Street, Northwest. He will continue to limit his work to the above named specialty.

Dr. J. N. Barney,

Of Fredericksburg, Va., has been promoted from major to lieutenant-colonel in the medical section of the Officers' Reserve Corps, Eightieth Division, Third Corps Area. Dr. Barney is now in command of Physical Examination Unit No. 12, Third Corps Area, United States Air Service.

Dr. C. R. Anderson,

Winchester, Va., has been named one of the vice-presidents of the newly organized Lions' Club in that city.

A Woman Bit Off Her Nose.

Dr. Stephen Harnsberger, of Warrenton, Va., reports the very unusual case of a married woman living near the Rappahannock County line. While driving to Warrenton in her automobile, she struck an unnoticed depression in the smooth-surfaced road. So suddenly did it happen that her false teeth were forced over her upper gums, severing the nose from a quarter of an inch back of the end of the nose down to the tissues of the right cheek. Very careful work was necessary to get the openings just right. Under wet antiseptic dressings, the parts have healed nicely without

pain or swelling, and it looks as if no noticeable scar will result. People with false teeth should take warning.

Doctors Interested in Fox Hunts.

Dr. F. A. Sinclair, Newport News, has been elected president of the Virginia Fox Hunters' Association, and Dr. J. Frasia Jones, Richmond, treasurer.

American Pediatric Society.

At the meeting of this Society, held in the early summer, Dr. John Ruhrah, Baltimore, was elected president, and Dr. Howard C. Carpenter, Philadelphia, was re-elected secretary.

Dr. Charles E. Dyer,

Jewell Ridge, Va., who is an interested member and officer in the American Legion, delivered the Legion's greeting to the Sons of Confederate Veterans on the occasion of their annual State reunion.

New Superintendent at Winchester Memorial Hospital.

Miss Martha Keating, of Catonsville, Md., has accepted the position as superintendent of Winchester, Va., Memorial Hospital, to succeed Miss Anna MacMillan who resigned, effective September 1st, to take up important work in the South.

The American Association for Medico-Physical Research

Will hold its thirteenth annual convention in the Auditorium Hotel, Chicago, September 24-28, inclusive, under the presidency of Dr. S. Edgar Bond, of Richmond, Ind. Dr. Elnora C. Folkmar, Washington, D. C., is secretary. Over 500 members are expected to be in attendance and the scientific program will be one of unusual interest. Special clinics and exhibits, historical, scientific and commercial exhibits will be so arranged as to form a unique educational demonstration of the development of the rational use of physical methods in therapy.

Correction.

In the July issue of the VIRGINIA MEDICAL MONTHLY, there appeared on pages 240 and 241 an article by Wilbur M. Bowman, M. D., entitled, "A Note in Reference to the Bile Reaction in Urine." By error his address, affixed to this article, was put Central State Hospital. It should have been Petersburg Hospital, at which place Dr. Bowman is now serving an internship.

Dr. Charles H. Phillips,

Of the class of '16, Medical College of Virginia, who has for several years been professor of pathology at Wake Forest College, School of Medicine, Wake Forest, N. C., has been appointed professor of pathology at the Medical College of Virginia, Richmond. He succeeds Dr. W. H. Cook, who has left to accept a position at the University of Pittsburgh. Dr. Phillips has many friends in this city, having served an internship at Stuart Circle Hospital, Richmond, after his graduation.

The Physicians of Brunswick County, Va.,

Have formed the above named organization, with Dr. W. H. Lewis, of Lawrenceville, president, and Miss Grace B. Mallory, also of Lawrenceville, secretary. The main object of this organization is to prepare and keep a list of delinquents as to physicians' accounts. A list of those who do not pay within a given date is furnished all members on the first of each month. After receiving this, no physician will visit the person or the family of the person until the account has been settled, except in emergency. In such event, the physician in attendance is expected to call attention to the delinquent account and make an effort to have it paid. As soon as payment is made in part or in full, notice is to be given the secretary in order that she may keep an accurate list.

Dr. India Hunt,

Recently connected with Blue Ridge Sanatorium, Charlottesville, Va., is now working with the State Board of Health.

American Institute to Hold Big Exposition of Inventions.

Manufacturers in every American industry will be interested in the Exposition of Inventions to be held, December 8th to 13th inclusive, 1924, in the famous Engineering Societies Building, New York City. The American Institute of the City of New York is handling this display through its Inventors' Section, with behind it an experience of ninety-six years in fostering and portraying American industrial life.

Arrangements for the display of working models or actual devices at the Exposition of Inventions can be arranged through a Committee of the American Institute at 47 West 34th Street, New York City. All proposed displays are subject to approval by the Institute, it being the desire to show only those things of sound worth.

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U. S. Civil Service Positions.

The U. S. Civil Service Commission, Washington, D. C., or the secretary of the Board of U. S. Civil Service Examiners at the postoffice or customhouse in any city will furnish full information and application blanks for the following positions:

Applications for junior medical officer (tuberculosis; psychiatry) will be accepted until August 19. Preference will be given to colored eligibles as this is to fill vacancies in the U. S. Veterans' Hospital, Tuskegee, Ala., which has been built for colored patients.

Examinations will be held throughout the country on September 17, for physiotherapy aide and physiotherapy pupil aide, to fill vacancies in the Public Health Service and in the Veterans' Bureau throughout the United States.

Applications will be received for occupational therapy aide and occupational therapy pupil aide until December 30, 1924, to fill vacancies in the Veterans' Bureau.

Doctor Wanted.

Wide practice in prosperous town and good surrounding country. Good roads, railroad, accredited four-year high school, churches, up-to-date drug store, national bank, general stores, hardware and farm machinery stores, and other industries. Property consists of modern ten-room dwelling, barn, garage, and other out-buildings on four town lots. Will sell property and introduce to practice for what property cost me. Reason for selling, taking up hospital work elsewhere. Only one other doctor located here. Address Box 124, Chilhowie, Va.

Guinea Pigs For Sale.

Prices reasonable. Apply to Health Officer, Newport News, Va. (Adv.)

Wanted.

Location on railroad in Virginia, by 1918 graduate, Class A school, who has had postgraduate work and one year hospital work. Doing general practice now. Aged 33 years. Will consider partnership. Can give references. Address No. 349, care this journal. (Adv.)

Obituary

Dr. Alvah Stoakley Hudson,

Health officer of West Point, Va., and a prominent physician and citizen of that section, died suddenly on the evening of June 29th. Dr. Hudson was born in King and Queen County, Va., about forty-five years ago. Upon graduating from Medical College of Virginia in 1906, Dr. Hudson located in West Point. He was a member of the Masonic and Pythian lodges, of the Kiwanis Club, and had been a member of the Medical Society of Virginia since 1907. He is survived by his wife, mother and several sisters and a brother.

Dr. James H. Jones,

Blackstone, Va., died July 16th, in his home at that place. He was born in Brunswick County, Va., in 1838 and studied medicine at the Medical College of Virginia. He graduated in 1859, after which he served as acting assistant surgeon in the Confederate States' Army. He had been a member of the Medical Society of Virginia since 1871 and an honorary member since 1906. He is survived by nine children.

Dr. James White Cummings,

Of Abingdon, Va., died July 9th, at the age of sixty-six years. He graduated from the Medical Department of the University of the City of New York in 1879. Dr. Cummings had been a member of the Medical Society of Virginia since 1889.

Dr. Richard Henry Stuart, Jr.,

Of Colonial Beach, Va., died July 19th, after a short illness. He was forty-one years of age and had graduated in medicine at the University of Virginia in 1907. He was a son of Dr. and Mrs. R. H. Stuart, of Stratford. His wife and a number of relatives survive him.

Mrs. George W. Brown,

Wife of Dr. George W. Brown, superintendent of Eastern State Hospital, Williamsburg, Va., died at her home in that place, June 30th, her death being due to bronchopneumonia following influenza.

Dr. Robert Williamson Lovett,

Of Boston, Mass., died suddenly at Liverpool, England, July 2nd. Dr. Lovett was widely known as orthopedic surgeon, teacher and author. He was sixty-four years of age and a graduate of Harvard University Medical School, in which university he had served for a number of years as professor of orthopedic surgery.